

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Expanding Consumers' Video Navigation Choices)	MB Docket No. 16-42
)	
Commercial Availability of Navigation Devices)	CS Docket No. 97-80
)	

COMMENTS OF COMCAST CORPORATION AND NBCUNIVERSAL MEDIA, LLC

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In response to Congress's deregulatory action and direction in STELAR to eliminate the Commission's costly set-top box integration ban, the Commission in this *Notice* proposes some of the most expansive regulations of multichannel video programming distributors ("MVPDs") ever pursued.¹ The *Notice* claims that the proposal is simply aimed at meeting the statutory directive in Section 629 of ensuring the commercial availability of navigation devices. It does nothing of the sort. The notion that Section 629 empowers the Commission to force MVPDs to unbundle their service and provide new Commission-mandated standardized "Information Flows" for free to third parties so that the third parties can create their own separate, derivative services (referred to herein as the "Set-Top Box Mandate") is flatly inconsistent with the plain language, prior judicial and Commission interpretations, and legislative history of the statute. Section 629 makes clear that Congress intended to promote the retail availability of new equipment used by consumers to access *an MVPD's services* over the MVPD's network, not

¹ See *Expanding Consumers' Video Navigation Choices; Commercial Availability of Navigation Devices*, Notice of Proposed Rulemaking and Memorandum Opinion and Order, 31 FCC Rcd. 1544 (2016) ("*Notice*"). Comcast Corporation and NBCUniversal Media, LLC (collectively, "Comcast") hereby submit comments to the *Notice*.

mandate the unbundling of an MVPD's content to favor competing third-party video distribution services. In short, the Commission's proposal far exceeds the bounds of its rulemaking authority.

The various rationales the *Notice* has put forth to justify the proposed rules quickly collapse upon closer inspection. Further, this mandate would result in significant harms to innovation, high-quality programming, critical consumer protections like privacy and accessibility, and copyright interests and First Amendment rights of MVPDs and programmers, and would impose additional costs on consumers.

Importantly, the harms of the Commission's mandate are entirely avoidable and unnecessary given that, as detailed in the Commission's own Downloadable Security Technical Advisory Committee ("DSTAC") Report, MVPDs are creating the competitive choices hoped for in Section 629 by delivering their services via apps on a widening array of customer-owned devices, and recent apps-related announcements from AT&T, Comcast, and others underscore that marketplace adoption of apps continues to accelerate. In fact, Comcast just announced the launch of its ground-breaking HTML5 apps-based "Xfinity TV Partner Program" to expand the range of retail devices its customers can use to access their Xfinity TV service, with Samsung as the first smart TV manufacturer to join the program. Comcast also is open to working with device makers that do not support HTML5, and recently announced a partnership with Roku to build a new Xfinity TV Partner app designed specifically for Roku TVs and streaming players. The market response to these announcements has been very strong, and Comcast has already received inquiries from over 20 companies interested in the new program.

MVPD apps comply with the requirements of Section 629 and are furthering Congress's and the Commission's device goals, without any of the harms associated with the Commission's

approach. To eliminate any doubt about the continued acceleration of apps, Comcast puts forth principles that will ensure (i) an open standards-based app is available to any interested third-party device manufacturer on commercially reasonable terms, and (ii) good faith negotiations on a customized app solution with device manufacturers that do not support that standard. Comcast believes these principles could serve to advance the statutory goals while preserving the rights of content owners and Title VI protections.

I. INTRODUCTION AND SUMMARY

The Commission initiated this rulemaking to consider how to increase consumer choice in retail devices for accessing MVPD programming services. That is a worthy goal that Comcast supports as well, and it is one that Comcast and other MVPDs have been diligently working toward in this highly competitive video marketplace.

Today's video landscape is a far cry from what it was 20 years ago when Section 629 was adopted. We are in a new Golden Age of video, and consumers enjoy an extraordinary amount of choice among video providers and high-quality content. Ninety-nine percent of consumers can choose among three or more MVPDs, and the explosive growth of an ever-expanding number of online video distributors ("OVDs") is giving consumers new video options (and many on a nationwide basis). Faced with fierce competition, providers are intent on giving consumers the flexibility they demand to access video programming on the devices of their choice, and delivering more value to customers.

Comcast is responding to this dynamic marketplace in a number of ways, including with its innovative award-winning Xfinity TV platform and enabling access to that platform on a growing array of devices. Like other MVPDs, OVDs, and networks, Comcast is using apps to deliver its Xfinity TV service to customer-owned retail devices. Indeed, MVPD apps are driving

more retail device choices for consumers to access their MVPD service, consistent with and in furtherance of Section 629.

Even though the apps revolution is still in its early stages, its growing success is undeniable:

- Over 460 million connected, consumer-owned devices support one or more MVPD apps.
- Two-thirds of these devices support apps from all of the top 10 MVPDs.
- Consumers have downloaded these apps more than 56 million times.
- Comcast customers have downloaded the Xfinity apps to a variety of connected devices more than 23 million times.
- Comcast customers used these apps and the Xfinity TV website and portal to watch nearly 500 million hours of video in 2015 alone.

This trend is bound to accelerate – in the absence of any government regulation – as consumers and the marketplace continue to drive this apps-based revolution. In fact, as explained below, Comcast recently launched its Xfinity TV Partner Program to deploy a standards-based app (using the W3C open HTML5 standard) that will expand the range of retail devices its customers can use to access their Xfinity TV cable service, including live, on demand, and cloud DVR programming without the need to lease a set-top box. By leveraging open HTML5 technologies, the Xfinity TV Partner Program provides a common framework to which smart TV, TV-connected, and IP-enabled retail device manufacturers can build in order to make the Xfinity TV Partner app available to customers on their devices. Samsung, one of the world's largest smart TV manufacturers, is the first to join the program. And Comcast is open to working with device manufacturers that do not support HTML5 to explore customized versions of the Xfinity TV Partner app for their platforms as well. Comcast has already developed award-winning app experiences for iOS and Android devices, and recently announced an agreement with Roku. This customized app will enable Comcast customers to access their Xfinity TV cable

service on their TVs via a Roku streaming player or directly on a Roku TV without the need to lease a set-top box. The response to these announcements has been very strong, and Comcast has already received inquiries from over 20 companies interested in the new program. In addition, Comcast is working on a downloadable security solution for the TiVo platform. TiVo has remarked that “[a]mong pay-TV providers, Comcast has been the most supportive of enabling innovation in retail set-top boxes, thereby allowing consumers to have a robust retail alternative to an operator-leased set top box.”

Together, these partnerships with leading manufacturers will further expand the range of retail devices customers can use to access their Xfinity TV service. And Comcast is so confident in, and dedicated to, this apps model as the best pro-consumer approach for driving additional retail availability of third-party navigation devices that it puts forth herein specific principles for deploying its apps on retail devices, which will eliminate any doubt about the continued acceleration of apps and further Congress’s retail device goals.

The Commission’s own DSTAC Report outlined the clear benefits of the market-driven apps approach to enable access to MVPD services on retail devices. The Report concluded that, in light of the different network architectures and varying security and other technology needs of MVPDs, “[i]t is not reasonable to expect that all [operators] will re-architect their networks in order to converge on a common solution.”

In a rush to judgment, however, the *Notice* disregards this consensus conclusion reached by the committee’s technical experts – and the congressional mandate to deregulate – and inexplicably ignores the market-driven apps-based approach, which is rapidly proliferating in the marketplace and giving consumers numerous options to receive video programming services. Instead, the *Notice* puts its thumb firmly on the scale in favor of a totally theoretical and much

more intrusive regulatory approach, which was also described in the DSTAC Report, and is similar to the AllVid concept that was thoroughly evaluated and properly abandoned by the Commission more than five years ago. Surprisingly, the White House has inappropriately weighed in and endorsed the *Notice*'s heavy-handed and one-sided technology mandate in the name of promoting a free market and competition. Like the Commission's *Notice*, however, the White House provides no credible support for its position, and completely ignores the fact that MVPD apps are already driving significant competition and consumer choice in the device marketplace.

This, in and of itself, is concerning. But equally concerning is that, while claiming it is attempting to build a complete record, the Commission already appears to have made up its mind and is barreling forward on an accelerated timeframe toward adopting this alternative "Set-Top Box Mandate" approach, which is preferred by certain entities pushing their own business interests at the expense of consumers, MVPDs, programmers, and content creators. Of particular concern, the Commission has allotted far less time for comments on what one Commissioner correctly observed are "complicated" and "important" issues than was the case in its 2010 AllVid Notice of Inquiry, and, in a highly unusual procedural action, has set aside only a single week for ex parte meetings shortly after the comment period closes. Unfortunately, the Commission is not alone in its rush to judgment, and it is disappointing that the White House and its advisory arm on telecommunications policy, the National Telecommunications and Information Administration ("NTIA"), have decided to weigh in on such a complex issue – and one that is before an *independent* agency – before comments have even been filed and before the record has even been developed.

Even more troubling is that the Commission and the Administration completely overlook the Set-top Box Mandate’s substantive flaws. This proposal would require MVPDs to become mere wholesale providers of raw programming and unbundle their services so that third-party devices and apps can reassemble the piece parts into derivative services without the approval of MVPDs, or compensation to programmers or content owners (and in violation of the detailed terms of their agreements). Such a requirement is flatly inconsistent with the plain language, prior judicial and Commission interpretations, and legislative history of Section 629, which is intended to promote the retail availability of new *equipment* used by consumers to access *an MVPD’s services* over the MVPD’s network, not mandate the unbundling of an MVPD’s content to favor competing third-party video distribution *services*. The mandate also violates other federal laws, including the copyright laws, and purports to override third-party contracts, all in an extra-legal fashion. There can be no mistake that one of the key goals of the Commission’s proposal is to eliminate any role for MVPDs in the presentation of their own services on third-party devices and apps. Under the proposal, MVPDs must hand over their “Information Flows” indiscriminately to third parties – i.e., they are essentially forced to act as common carriers, contrary to the express prohibition on such regulation of cable service in Section 621(c) of the Communication Act – and are precluded from *any* participation in implementing the content security systems, the testing and certification of devices, or even how MVPD content is displayed by third parties to customers – much of which MVPDs are required to do pursuant to their contracts with programmers.

Attempts in the *Notice* to justify this far-reaching mandate do not withstand scrutiny, and are completely divorced from today’s technological and marketplace realities. Through creative, results-oriented market definitions and its presumption that third-party control of the user

interface and navigation of MVPD services is a panacea for imagined harms, the *Notice* strains to find market failure where, by any objective measure, none exists. Rather, as noted, the marketplace is exploding with new commercially available device options, and MVPDs and other video providers are using apps to deliver their services on those devices. In short, these mandates would mark a radical government intervention in the MVPD marketplace at a time when, as the Commission has previously acknowledged, there is more video competition, choice, and innovation than ever before.

As the Commission rushes toward adoption of its proposed regulations, it is ignoring the growing chorus of major objections to its Set-Top Box Mandate from a wide variety of sources. Members of Congress (Democrats and Republicans alike); numerous programmers, including small and independent ones; diversity organizations; and equipment manufacturers, among others, have all weighed in against the Commission's proposal, including the following:

- A bipartisan group of five House Judiciary Committee members noted: "Regulation in this space has the potential to drastically weaken the economics of the legitimate businesses that have fueled so much of the innovation and consumer choice that has taken place during the last decade."
- Professor Jason Llorenz of Rutgers University said: "It would be the worst kind of mandate – picking winners and losers in a market that is already competitive and flourishing instead of allowing competition and consumer demand to win out."
- Former FCC Chief Economist, Professor Steven Wildman, concluded: "[T]he proposed rules, far from promoting a competitive marketplace, are likely to artificially distort competition to the detriment of consumers."
- Larry Downes, Georgetown Center for Business and Public Policy explained: "Even in the best of circumstances, developing the new standards will take years, cost millions, and unintentionally slow or stifle innovations yet to be identified."
- According to Roku: "[T]he FCC's proposed regulation won't help consumers, who will likely see prices for set-top boxes and other streaming technology climb along with the cost of pay TV services. The regulations would, however, help companies like Google expand their reach into consumers' homes on the back of other people's content rights with the ultimate goal of offering its own pay TV services."

- 30 members of the Congressional Black Caucus observed: “AllVid will cause irreparable harm to independent and minority programmers by allowing third parties to strip programming from visible channel placements and relegate it to the bottom of the pile.”
- Rosa Mendoza, Executive Director of the Hispanic Technology & Telecommunications Partnership stated: “The FCC’s new set-top box regulations provide no real guarantee that minority-owned programming will be easily accessible to minority communities. The proposal could instead harm programmers by making their content harder to find in programming guides or search menus provided by third-party boxes”
- Diverse national chambers of commerce noted: “This proposed rule represents a massive federal intervention into the television marketplace, which has never been more dynamic or competitive. Far from serving the best interests of minority communities, this rule creates an unfair advantage for large tech companies at the expense of minority content creators and entrepreneurs.”
- Ovation TV warned: “The Commission’s proposed AllVid regulations will undermine this successful formula and, in turn, threaten the stability and success of our network.”
- As former Chairman of the House Energy and Commerce Committee U.S. Rep. Henry Waxman put it: The proposal “would apply the reverse-Midas touch to this golden age of television, because it would disrupt the delicately balanced competitive forces that are behind the explosion of creativity we’ve benefited from in recent years.”

Together, these parties have raised significant concerns with the Commission’s proposal, namely the significant harms to consumers, MVPDs, programmers, content owners, and innovation – harms that are in direct conflict with Section 629 and cannot be justified simply by invoking Section 629’s goal of greater device competition:

- ***Exceeds Authority and Is Contrary to Law.*** The proposal vastly exceeds the Commission’s authority under Section 629 and would violate other provisions of the Communications Act, substantial copyright and other IP protections, and the First Amendment. Moreover, the *Notice* fails to explain why this mandate is even necessary given the plethora of apps-driven device choices (that do not pose the same legal and public interest harms of the proposal) and, therefore, is arbitrary and capricious.
- ***Substantial Costs to MVPDs, Consumers, and Innovation.*** The *Notice* vastly understates the level of complexity, costs, and other burdens necessary to implement its proposed Set-Top Box Mandate. In his attached declaration, Comcast’s Chief Technology Officer, Tony Werner underscores that MVPDs will be forced to make substantial network changes, and customers also will need new MVPD-supplied equipment in their homes to receive MVPD programming on third-party retail devices and apps (*see* Appendix A). This would run counter to the Commission’s goal of reducing reliance on MVPD-supplied customer equipment. In addition to the leased

equipment costs, all of the other costs associated with implementing the Set-Top Box Mandate ultimately will be borne by consumers. Ironically, the *Notice's* mandate and its parity requirements would also have the effect of slowing the launch of new, innovative features and services by subjecting changes in MVPD service to standards-setting and regulatory delays, and may significantly delay the transition of cable to an Internet Protocol ("IP")-based architecture that will enable consumers to receive high-quality MVPD services on the devices of their choice without the need for an operator-supplied set-top box.

- ***Endangers Entire Content Protection Ecosystem.*** The Set-Top Box Mandate threatens to undermine the economic model that supports the robust array of diverse content choices consumers enjoy today. Programmers would lose control over the distribution and monetization of their services, and have no ability to enforce the detailed terms they have negotiated with MVPDs to govern redistribution, including over content protection (e.g., content security, geographic restrictions, and restrictions on redistribution), content integrity (e.g., preserving the intended presentation of content, including restrictions on the insertion of advertising in and around content), and content promotion (e.g., advertising, channel placement, content recommendations, and search result ordering), and other matters. This mandate essentially creates a zero-rate compulsory copyright license allowing third parties to retransmit copyrighted programming that MVPDs have negotiated and paid for, thus devaluing programming rights. The proposal would be particularly detrimental to diverse and independent programmers, undermining the Commission's own stated policy goals of promoting these entities in its companion Notice of Inquiry adopted on the same day as the *Notice*.
- ***Jeopardizes Content Security and Facilitates Piracy.*** The Commission's proposed mandate limits the range of content protection technologies that MVPDs may use to satisfy the rules, relies on outside entities to test and certify third-party devices and apps, and eliminates various technological measures that MVPDs use to secure content through their apps and user interfaces. In addition, it undermines programmers' ability to negotiate with MVPDs the appropriate levels of content security and associated requirements for renewing DRM systems, revoking compromised devices, and providing cures for security breaches. There would also be increased risk of piracy and service theft. In all, the Set-Top Box Mandate would create a less secure environment for MVPD content than the apps model, in contravention of Section 629, and potentially discourage programmers from licensing higher value content to MVPDs.
- ***Weakens Consumer Protections.*** Today, MVPDs are subject to strict privacy and other consumer protection obligations under the Communications Act. However, under the proposed rules, third-party device makers and app developers would simply certify to MVPDs that they are complying with privacy protections, as well as other important consumer requirements such as Emergency Alert System ("EAS") mandates, and commercial limits in children's programming. This self-certification regime is both legally impermissible and unworkable. There is simply no practical way for MVPDs to monitor the activities of third parties, let alone enforce compliance with consumer protection obligations, particularly when these third parties are not directly liable – either by contract or by regulation – to MVPDs or the Commission for such compliance. And

even assuming counterfactually that MVPDs *could* detect privacy or other violations, the *Notice*'s proposed remedy – decertification of the third-party device – highlights the absurdity and anti-consumer nature of its proposal. Such a result would render useless the third-party equipment purchased by the consumer, forcing her to purchase yet another third-party device to receive the MVPD service, lease a set-top from the MVPD, or access the programming via the MVPD's app on various devices – and all the while leaving unredressed the privacy or other harms experienced by the consumer. The group most at risk under this regime would be consumers. The Commission cannot ignore these significant consumer protection harms that are entirely of its own creation – especially when the apps-based approach *avoids* all of these consumer protection concerns.

- ***Unworkable Standards-Setting Process.*** MVPDs would be required to deliver three standardized Information Flows to third-party device manufacturers and app developers. To achieve this, the *Notice* contemplates an unworkable standards-setting process with an entirely unrealistic two-year compliance deadline, and with proposed fallback specifications that would track proposals put forth by the proponents of new regulations and undermine a fair, balanced, and consensus-driven standards process. Dr. Besen explains in his attached declaration (*see* Appendix B) that mistakes in government-imposed standards setting often cannot be avoided, and that the government is ill-suited to mandate technical standards, especially in highly dynamic industries such as this. The Set-Top Box Mandate would only saddle the industry with another costly technology mandate that will likely be obsolete before it can even be implemented.

As summarized in the chart below, any objective analysis of the options available to the Commission leads to only one rational conclusion: Unlike the Set-Top Box Mandate, the apps-based approach – which is endorsed and supported by content producers, programming networks (including independent and diverse programmers), MVPDs, and many others, and around which Comcast offers to abide by the principles set forth below – is the best path forward to achieving Congress's device goals in a manner consistent with Section 629 and congressional intent. And it does so while avoiding the costly heavy-handed regulation, technical mandates, fatal legal flaws, and risks to innovation, programming security, and consumer protections inherent in the Commission's proposal.



COMMISSION'S SET-TOP BOX MANDATE



APPS APPROACH

COMPLIES WITH LAWS	<ul style="list-style-type: none"> ✗ Far exceeds Section 629, violates various communications and copyright laws and constitutional protections, and is arbitrary and capricious 	<ul style="list-style-type: none"> ✓ Complies with Section 629 and all other legal requirements
FOSTERS INNOVATION	<ul style="list-style-type: none"> ✗ Unproven in the marketplace with speculative manufacturer and consumer demand ✗ Locks in technical solutions that will be overtaken by marketplace developments and deters innovation ✗ Requires development of new standards through an unworkable and time-consuming, multi-year standards-setting process ✗ Rigid "parity" rules delay creation of new features and services 	<ul style="list-style-type: none"> ✓ Allows for rapid innovation and new service and feature upgrades through automatic app updates and downloads
EASY TO IMPLEMENT	<ul style="list-style-type: none"> ✗ Requires substantial and costly changes to MVPD networks ✗ Requires a new in-home gateway device (a "second box") ✗ More costs to consumers ✗ Requires additional network bandwidth, reducing bandwidth available for other innovations and migration to all-IP services 	<ul style="list-style-type: none"> ✓ Compatible with existing MVPD networks and supported on many retail devices ✓ Same consumer-friendly approach as Netflix, Amazon, Apple, Google, and others in placing apps on third-party devices
MAINTAINS MVPD SERVICE	<ul style="list-style-type: none"> ✗ Customers don't receive their MVPD service ✗ Infringes on MVPDs' copyright interests in distinctive service offerings 	<ul style="list-style-type: none"> ✓ Allows MVPDs to deliver their services as intended and as customers expect ✓ Allows third-party device manufacturers, e.g., Roku and Samsung, to innovate through their own topline user interfaces
HONORS PROGRAMMING AGREEMENTS	<ul style="list-style-type: none"> ✗ Infringes on programmers' copyright interests by creating a zero-rate compulsory copyright for third parties ✗ Allows third parties to ignore programming agreements (i.e., overlay ads, disrupt channel lineups and content presentation) ✗ Disrupts economic incentives to invest in high-quality programming ✗ Hurts diverse and independent programmers 	<ul style="list-style-type: none"> ✓ Respects all terms in programming agreements



COMMISSION'S SET-TOP BOX MANDATE



APPS APPROACH

PREVENTS PIRACY AND THEFT OF SERVICE	<ul style="list-style-type: none">✗ Weakens content security and increases risk of piracy by limiting range of permissible DRMs and security technologies✗ Eliminates MVPD security features in apps and user interface✗ Prevents MVPDs from testing and certifying security of third-party devices and apps	<ul style="list-style-type: none">✓ MVPDs maintain secure “chain of trust” with security features built into apps
PROTECTS CONSUMER PRIVACY	<ul style="list-style-type: none">✗ Unenforceable self-certification for statutory privacy protections, with no way to monitor compliance by third parties✗ Even if a violation is detectable, only remedy is decertification of device, which makes device useless, thereby hurting consumers✗ Requires disclosure of sensitive customer entitlement data to third parties without customer consent✗ No private right of action for privacy violations by third parties	<ul style="list-style-type: none">✓ MVPD apps comply with strict privacy requirements under Sections 631 and 338 of the Communications Act
MAINTAINS OTHER CONSUMER PROTECTIONS	<ul style="list-style-type: none">✗ Creates “app gap” since third-party apps are not subject to FCC’s accessibility rules and decisions; weakens accessibility compliance and enforcement regime✗ No assurances that emergency alerts are transmitted via third-party devices and apps✗ Third-party devices and apps would be free to overlay ads on children’s programming, exceeding children’s programming advertising time limits	<ul style="list-style-type: none">✓ MVPD apps ensure compliance with accessibility, EAS, and children’s programming ad limit obligations
ENSURES CUSTOMER SERVICE	<ul style="list-style-type: none">✗ Customers confused about who is responsible for problems accessing MVPD content on third-party devices or apps✗ No guarantee that third parties will have adequate customer service resources to assist customers	<ul style="list-style-type: none">✓ Customers contact MVPDs to troubleshoot any issues, or use customer service resources within apps; facilitates innovative MVPD customer service solutions, e.g., remote diagnostic and support tools

II. THE COMMISSION’S SET-TOP BOX MANDATE IS UNJUSTIFIED IN TODAY’S HIGHLY COMPETITIVE AND DYNAMIC VIDEO MARKETPLACE.

The Commission has launched this rulemaking against a backdrop of staggering positive changes in the video marketplace. Competition is indisputably high – whether from traditional programmers and distributors, or from online content creators and OVDs, all available on a dizzying array of devices. In such a marketplace, new burdensome command-and-control regulation and government technology mandates – particularly those focused solely on MVPDs – cannot be justified.

MVPDs compete fiercely with one another and strive to differentiate themselves and add value for their customers as they face new, robust sources of competition. Today, ninety-nine percent of consumers can choose from three or more traditional MVPDs,² and cable’s share of MVPD customers has dropped from 96 percent to 53 percent since 1992 (with DBS and telco MVPDs now serving almost half of all MVPD subscribers).³

At the same time, the explosive growth of online video has provided even more options for consumers. They can obtain video from a growing array of OVDs – from well-established powerhouses like Amazon and Netflix (which has nearly 47 million domestic subscribers – more than any MVPD);⁴ to programmers like HBO, CBS, and Starz that offer their content directly to consumers on a standalone basis; to new entrants like Sling TV and Sony’s PlayStation Vue that provide a mix of linear and on-demand content on a nationwide basis. In 2015 alone, at least 33

² *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Sixteenth Report, 30 FCC Rcd. 3253 ¶¶ 30-31 & n.71 (2015) (“*Sixteenth Video Competition Report*”).

³ SNL Kagan, U.S. Multichannel Industry Benchmarks (1992-2015).

⁴ Netflix Inc., Q1 2016 Letter for Shareholders, at 1 (Apr. 18, 2016), <http://ir.netflix.com/events.cfm>.

new over-the-top (“OTT”) services launched.⁵ And just last month, AT&T/DirecTV announced that the combined company will be launching a new national service that will essentially provide the DirecTV service on an over-the-top basis.⁶ An estimated 61 million households regularly watch TV or movies online today,⁷ and an estimated 9.2 million households rely on OTT delivery to view TV shows and movies in lieu of an MVPD service.⁸ With this proliferation of new distribution outlets for programmers, consumers are enjoying a new Golden Age of video – with more diverse, higher quality content than ever before.

The Commission itself has recognized the sea change that is occurring in the video marketplace. In the 2015 in which the Commission concluded that cable systems nationwide are presumptively subject to effective competition – the effect of which has been to largely eliminate cable rate regulation around the country – the Commission underscored that the video marketplace is “markedly different” than it was two decades ago, “with cable operators facing dramatically increased competition.”⁹ And in defending that decision before the D.C. Circuit earlier this year, the Commission reiterated that “the MVPD market has undergone a fundamental transformation.”¹⁰ Chairman Wheeler observed that “[i]n the more than twenty

⁵ Ali Choukeir, *Number of US OTT Video Services Erupts in 2015*, SNL Kagan (Nov. 23, 2015), <https://www.snl.com/InteractiveX/article.aspx?Id=34510329>.

⁶ John Eggerton, *AT&T: OTT Video Plan Obviates Need for Set-Top Rules*, Multichannel News (Mar. 1, 2016), <http://www.multichannel.com/news/content/att-ott-video-plan-obviates-need-set-top-rules/402962>.

⁷ Ian Olgeirson, *Online Substitution Pressures Multichannel, Mitigated by Influence of VSP Skinny Packages*, SNL Kagan (Nov. 20, 2015), <https://www.snl.com/InteractiveX/article.aspx?ID=34481378>.

⁸ *Id.*

⁹ *Amendment to the Commission’s Rules Concerning Effective Competition, Implementation of Section 111 of the STELA Reauthorization Act*, Notice of Proposed Rulemaking, 30 FCC Rcd. 2561 ¶¶ 6-7 (2015); see also *Amendment to the Commission’s Rules Concerning Effective Competition, Implementation of Section 111 of the STELA Reauthorization Act*, Report and Order, 30 FCC Rcd. 6574 ¶¶ 4, 7 (2015) (“*Effective Competition Order*”).

¹⁰ Brief of Respondents at 11, *Nat’l Ass’n of Telecomms. Officers & Advisors v. FCC*, No. 15-1295, (D.C. Cir. Feb. 2, 2016).

years since Congress's 1992 instructions, competition in the video marketplace has increased dramatically."¹¹

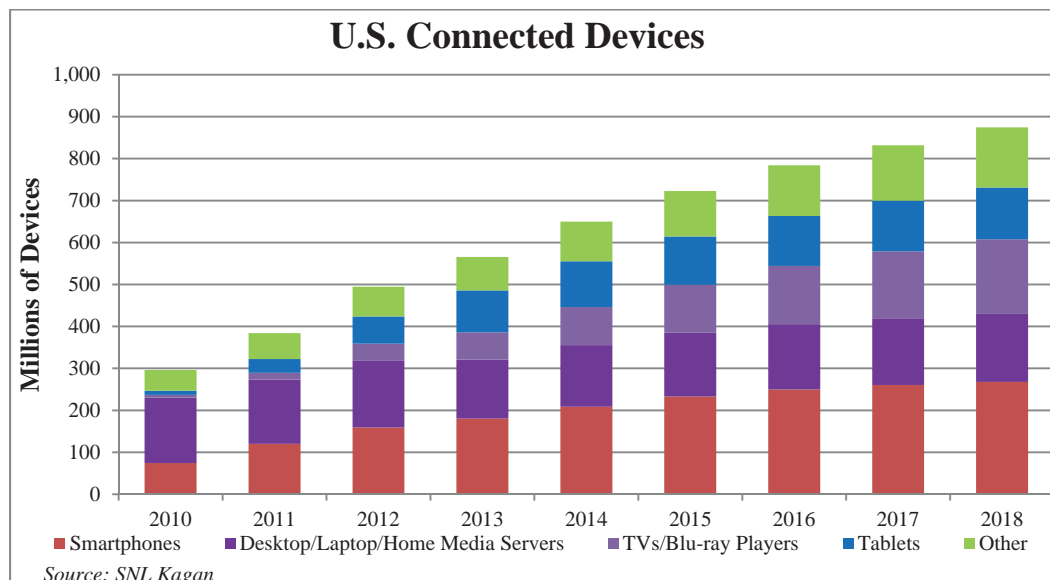
In light of these transformational changes in the video marketplace, one might expect the Commission to build on the work of the *Effective Competition Order* and revisit other legacy regulations that are outdated in the current marketplace. Yet this *Notice* takes the exact opposite tack, proposing one of the most far-reaching regulations of MVPD services the Commission has ever pursued. The *Notice* proposes to intervene in this marketplace and impose a new government technical mandate on MVPDs – and MVPDs alone – that is pure vaporware and totally unproven. It is no surprise therefore that Roku, among many others, has come out against the Commission's Set-Top Box Mandate.¹² While online competitors are free to innovate, unencumbered by these proposed rules, MVPDs would be subject to highly intrusive and disruptive regulations that will place them – as well as the programmers that license content to them – at a significant competitive disadvantage, stifle innovation, and burden their customers with new costs.

That the *Notice* would propose these highly regulatory measures in the name of promoting device competition is still more puzzling given the rapid expansion in device choices for consumers. Faced with a growing number of providers vying for their attention, consumers

¹¹ *Effective Competition Order*, 30 FCC Rcd. at 6607 (statement of Chairman Tom Wheeler).

¹² See Letter from Trey Hanbury, Counsel for Roku Inc., Hogan Lovells US LLP, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 2 (Dec. 14, 2015) (explaining that "given the rapid pace of change in the video distribution market, the Commission should be wary of propounding new regulatory mandates for set-top boxes that would explicitly or implicitly lock in any particular technical standard or require specific content-delivery methods"). TiVo also has raised questions about the Commission's approach. In discussing the proposal, TiVo CEO Naveen Chopra said: "Ultimately we believe this has been kind of set up as probably too much of a black and white situation between the interest of the Operator and interest of perhaps those seeking to change the role of the Operator. We're a big advocate of the pay television bundle." Chopra also noted that, "There are obviously others in the industry who have taken a more extreme position than that and I don't think it will be fair to lump us in with some of those players." TiVo Q4 2015 Earnings Conference Call (Mar. 1, 2016), <http://finance.yahoo.com/news/edited-transcript-tivo-earnings-conference-061500771.html>.

have come to expect – and demand – access to content anytime, anywhere, on the devices of their choice. And distributors and programmers are responding to that demand. As the Commission has previously observed “the [device] marketplace is more dynamic than it has ever been, offering consumers an unprecedented and growing list of choices to access video content,”¹³ and is giving “consumers more flexibility in content consumption through a growing list of devices”¹⁴



As shown in the graph above, in just the last five years, the number of connected video devices has risen 142% to an estimated 717.2 million devices and is expected to reach 874 million in 2018.¹⁵ According to one study, over 50% of all U.S. Internet homes have at least one connected TV or TV-connected streaming device, an increase of about 6 million homes total in the last year

¹³ *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Fifteenth Report, 28 FCC Rcd. 10496 ¶ 354 (2013).

¹⁴ *Sixteenth Video Competition Report* ¶ 321.

¹⁵ SNL Kagan, U.S. Connected Video Devices, 2010-2019, <https://www.snl.com/InteractiveX/doc.aspx?ID=33973043>.

alone.¹⁶ Commissioner Rosenworcel aptly noted that “[t]he future of watching video does not look like the past. . . . Because we live in a world where screens surround us, multiplying opportunities for viewing – anytime, anywhere. In short, television is changing fast.”¹⁷

In such a fast-paced and dynamic marketplace in which device choices for consumers are growing exponentially and MVPD apps are satisfying the aims of Section 629, it is particularly troubling – as well as unlawful – that the Commission appears to be rushing forward with the instant *Notice* and seemingly pre-judging the outcome with a one-sided proposal when there is no basis for such action under Section 629.¹⁸ Given the complexity and importance of this matter, it is critical that the Commission not adopt rules that will undermine the innovation that has taken hold of this ever-evolving and competitive video marketplace. As Congress directed when it adopted Section 629, the “Commission [should] avoid actions which could have the effect of freezing or chilling the development of new technologies and services.”¹⁹ The Commission itself previously acknowledged that imposing new rules in a changing marketplace “is perilous because regulations have the potential to stifle growth, innovation, and technical developments at a time when consumer demands, business plans, and technologies remain

¹⁶ Jeff Baumgartner, *Study: 49M U.S. Homes Connect TVs to Internet*, Multichannel News (Mar. 7, 2016), <http://www.multichannel.com/blog/bauminator/study-49m-us-homes-connect-tvs-internet/403113>.

¹⁷ *Closed Captioning of Internet Protocol-Delivered Video Programming: Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010; Closed Captioning of Internet Protocol-Delivered Video Clips*, Second Order on Reconsideration and Second Further Notice of Proposed Rulemaking, 29 FCC Rcd. 8687, 8764 (2014) (statement of Commissioner Jessica Rosenworcel).

¹⁸ Although the American Cable Association requested an additional 30 days to submit comments in the proceeding, the Commission granted a mere seven-day extension of time, and also set aside just one week for ex parte meetings following reply comments. Commission officials also attempted to host a town hall meeting with AllVid advocates in advance of even launching a rulemaking to tout the Commission’s proposal. See Gigi Sohn (@GigiBSohnFCC), Twitter (Feb. 16, 2016), <https://twitter.com/GigiBSohnFCC> “: @alexnogalesNHMC joins me 4 a Twitter Town Hall on benefits of @TomWheelerFCC’s plan 2 #UnlockTheBox”); see also FCC News and Events, *Twitter Town Hall with Gigi Sohn & Alex Nogales*, <https://www.fcc.gov/news-events/events/2016/02/twitter-town-hall-gigi-sohn-alex-nogales-unlocking-box-create-new>. The event was subsequently cancelled as it violated the Commission’s Sunshine rules.

¹⁹ H. Rep. No. 104-458, at 181 (1996).

unknown, unformed or incomplete.”²⁰ The Commission’s proposal entirely ignores this sound prior guidance.

III. THE APPS MODEL IS CONSISTENT WITH CONGRESS’S STATUTORY DIRECTIVE TO INCREASE DEVICE COMPETITION AND IS ACHIEVING THE GOALS OF SECTION 629.

Video applications, or apps, have been a key driver of the tremendous and fast-paced change in the marketplace and have been driving this change consistent with the clear language and intent of Section 629. Section 629 is aimed at giving consumers the ability to access their MVPD service on retail devices instead of their MVPD-supplied set-top box, directing the Commission to “adopt regulations to assure the commercial availability. . . [of] equipment used by consumers to access multichannel video programming and other services offered over multichannel video programming systems.”²¹ MVPD apps do exactly that. As detailed below, consumers today can download MVPD apps to a wide and growing array of retail devices and watch their MVPD service on those retail devices. The apps deliver the service intact, as intended by the MVPD and expected by the consumer; satisfy contractual, security, and regulatory requirements; and create none of the harms associated with the Set-Top Box Mandate. The Commission’s failure to take account of MVPD apps is both bad as a matter of policy and simply inconsistent with Section 629.

²⁰ *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Report and Order, 13 FCC Rcd. 14775 ¶ 15 (1998) (“*Navigation Device Order*”).

²¹ 47 U.S.C. § 549(a).

A. The Apps Model Is Providing MVPD Customers with a Growing Array of Retail Device Options for Accessing MVPD Video.

Apps are revolutionizing the way consumers access video – in ways not even imagined a decade ago. As Apple CEO Tim Cook correctly observed, “[T]he future of TV is apps.”²² Netflix has echoed these sentiments: “For us, the open set top is the Roku or the Apple TV or the smart TV. It’s a basic internet device that runs apps, and that’s what we think the future is”²³ Established OVDs, new linear streaming service providers, programmers, as well as MVPDs are all delivering more video services through apps that enable consumers to access programming on a growing array of retail consumer electronics (“CE”) devices, including smart TVs, streaming media players like Apple TV, Roku and Amazon Fire TV, streaming sticks, gaming consoles, smart phones, tablets, and computers.²⁴ As a result, subscribers are enjoying more and more device options for accessing their video services. Today, MVPD apps are available on over 460 million IP-enabled retail devices – far outpacing the number of set-top boxes currently in use.²⁵ Sixty-six percent of these devices support apps from all of the top MVPDs, and on average each consumer household has four retail devices with available MVPD apps.²⁶ Apps have been wildly popular with consumers, as MVPD apps have been downloaded over 56 million times.²⁷

²² Cat Zakrzewski, *Apple’s Tim Cook: “We Believe the Future of TV Is Apps,”* Wall St. J. (Sept. 9, 2015), <http://blogs.wsj.com/personal-technology/2015/09/09/apples-tim-cook-we-believe-the-future-of-tv-is-apps/>.

²³ Netflix Inc., Q1 2016 Earnings Call, Tr. at 9 (Apr. 18, 2016).

²⁴ In fact, 45% of smart TVs sold in the United States during the second quarter of 2015 supported apps, up from 34% the year before. See *The Future of TV Is Apps*, <https://www.ncta.com/positions/future-of-TV> (last visited Apr. 21, 2016).

²⁵ See Letter from American Cable Association et al., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 1 (Aug. 28, 2015) (“Joint Statement on DSTAC Report”).

²⁶ *Id.*

²⁷ *Id.*

This apps-based approach is delivering more consumer choices and benefits, and is achieving Congress's and the Commission's goals under Section 629 of promoting retail device alternatives to operator-supplied set-top boxes. Chairman Wheeler himself acknowledged that app-powered devices are delivering competitive device options for consumers, pointing out that "there are today the equivalent of competitive set-top boxes available in the market – for instance Google Chrome[cast]," which is an apps-based platform.²⁸ The Chairman has also stated that he envisions that the proposed Set-Top Box Mandate will enable cable providers to "talk to other devices just like your Smart TV talks to Netflix and Hulu," but overlooks the fact that apps are what make this functionality possible.²⁹

Even with this explosive growth, the industry is still in the early innings of the apps revolution. Consumers are watching more and more video using a variety of devices other than the set-top boxes they lease from their MVPDs. In response to this consumer-driven demand, MVPDs have been deploying apps on a widening array of devices, including smart TVs and TV-connected devices. For example, Time Warner Cable and Charter have apps for Roku, and DirecTV has deployed apps for smart TVs.³⁰ With *all* members of the video ecosystem embracing the apps approach, the *Notice* should be embracing, not disrupting, these marketplace developments.

²⁸ Laura Hamilton, *Is the FCC Trying to Solve a Set-Top Problem that Doesn't Exist?*, CED (Mar. 23, 2016), <http://www.cedmagazine.com/news/2016/03/fcc-trying-solve-set-top-problem-doesnt-exist>. The Chromecast platform supports third-party apps.

²⁹ See John Eggerton, *Wheeler Defends Navigation Device Proposal*, Broad. & Cable (Mar. 15, 2016), <http://www.broadcastingcable.com/news/washington/wheeler-defends-navigation-device-proposal/154683>. Furthermore, the Netflix and Hulu apps present their *own* proprietary user interfaces and are not evidence of a disaggregation model.

³⁰ See NCTA Comments at 9; DirecTV, *What Is a DirecTV Ready TV and How Does It Work?*, https://support.directv.com/app/answers/detail/a_id/3992/~/what-is-a-directv-ready-tv-and-how-does-it-work%3F (last visited Apr. 14, 2016).

This clear trend toward apps-based solutions on more devices is unsurprising. As Dr. Besen explains in his attached declaration, retail devices “are *complements* to the services MVPDs offer, so that improvements in devices that lead to increases in the demand for these services benefit [the] MVPDs.”³¹ Thus, MVPDs have strong incentives to deliver their services to a variety of retail devices. Such incentives are borne out by the fact that the industry has embraced an apps-based model that has allowed consumers to access MVPD services on hundreds of millions of retail devices.³²

Marketplace evidence of these incentives also directly contradicts the notion that MVPDs have been reluctant to deliver their services on retail devices in order to “protect” set-top box lease fees.³³ Notably, as NCTA and others have previously explained, any such claims are based on flawed and misleading “studies” that ignore the substantial costs involved in purchasing, maintaining, installing, and replacing set-top boxes.³⁴ Indeed, Dr. Besen makes clear that “MVPDs have strong incentives to support, not retard, the introduction of third-party devices

³¹ Appendix B, Declaration of Dr. Stanley M. Besen ¶ 3 (“Besen Decl.”)

³² *Id.* ¶¶ 3, 9-15.

³³ *See, e.g., Notice* ¶ 28; Consumer Video Choice Coalition Comments, MB Docket No. 15-64, at 3-4 (Oct. 8, 2015).

³⁴ Such claims also ignore the promotions and discounts MVPDs offer, which reduce consumer costs, as well as the availability of low-cost devices and “no box” apps and the millions of dollars of substantial costs to providers to support such equipment. *See* Letter from Neal M. Goldberg, Vice President & General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 2 (Feb. 11, 2016) (“NCTA Feb. 11 Ex Parte”) (noting that cable companies alone spend \$7 billion a year on customer equipment purchases and \$1 billion a year on equipment maintenance); *see also* Hal Singer, *The Sketchy Stat Behind the FCC’s ‘Unlock the Box,’* Forbes (Feb. 5, 2016), <http://www.forbes.com/sites/halsinger/2016/02/05/the-sketchy-stat-behind-the-fccs-unlock-the-box-campaign/#1e7fc2e269b8>; Hal Singer, *Before It ‘Unlocks the Box,’ the FCC Must Solve This Pricing,* Forbes (Feb. 15, 2016), <http://www.forbes.com/sites/halsinger/2016/02/15/before-it-unlocks-the-box-the-fcc-must-solve-this-pricing-puzzle/#542f8b103778>. Moreover, allegations that CE costs have dropped while cable prices for set-top boxes has skyrocketed ignore the significant quality improvements in set-top boxes over time and rely on misleading data about the cost of CE devices, which have actually increased – not decreased – over time. *See* NCTA Feb. 11 Ex Parte at 2.

that either can be provided at a lower cost than their own, or enhance the viewing experience of their subscribers, or both.”³⁵

Notwithstanding the clear evidence that the marketplace is delivering device alternatives to consumers without any government regulation and the Commission’s own prior recognition of this fact, the White House has decided to inject itself into this rulemaking by providing a full-throated endorsement – albeit factually unsupported – of the Set-Top Box Mandate.³⁶ The Administration hails the proposed Mandate as the “mascot” for its broader initiative to foster competition and the benefits of a free market economy across sectors, but, as the Commission has repeatedly observed, the video marketplace is *already* vibrantly competitive.³⁷ The White House does not explain, nor could it, why this marketplace is in need of such radical government intervention.

And, as detailed above, even focusing on the device marketplace, the Administration gives short shrift to the expanding device choices for consumers. In its letter endorsing the Set-Top Box Mandate – more than a week before comments have even been filed in the docket –

³⁵ Besen Decl. ¶ 9.

³⁶ Such interference is of particular concern since the rulemaking is before an *independent* agency. Indeed, courts have stressed the independence of the Commission from the executive branch. *See, e.g., United States v. Am. Tel. & Tel. Co.*, 461 F. Supp. 1314, 1335-36 (D.D.C. 1978) (“[B]oth as a conceptual and as a practical matter, the Federal Communications Commission is free from executive control and not answerable to instructions from the President or the Attorney General); *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 547 (2009) (Breyer, J., dissenting (The law does not permit independent administrative agencies “to make policy choices for purely political reasons nor to rest them primarily upon unexplained policy preferences. Federal Communications Commissioners . . . enjoy an independence expressly designed to insulate them, to a degree, from ‘the exercise of political oversight.’ That insulation helps to secure important governmental objectives, such as the constitutionally related objective of maintaining broadcast regulation that does not bend too readily before the political winds.”) (internal citations and quotations omitted).

³⁷ *See* Jason Furman & Jeffrey Zients, *Thinking Outside the Cable Box: How More Competition Gets You a Better Deal*, White House Blog (Apr. 15, 2016) (“White House Blogpost”), <https://www.whitehouse.gov/blog/2016/04/15/ending-rotary-rental-phones-thinking-outside-cable-box>; Remarks of President Barack Obama, Weekly Address (Apr. 16, 2016), <https://www.whitehouse.gov/the-press-office/2016/04/16/weekly-address-ensuring-our-free-market-works-everyone>.

NTIA states, remarkably, that “available evidence clearly suggests that consumers have few alternatives to MVPD-supplied navigation devices and are frustrated by the high cost of leasing those devices.”³⁸ Of course, the letter does not cite to any of this “available evidence” since no such evidence exists. NTIA at least acknowledges that MVPD-provided apps “produce significant consumer benefits,” but then concludes that those apps-driven device options do “not address – let alone resolve – the competitive concerns at the heart of Section 629” because MVPD apps present MVPD service as the MVPD intended rather than giving a third-party device maker or app developer the ability to present MVPD content as part of a new third-party service.³⁹ NTIA claims that the statute and legislative history support the Commission’s proposal, but, as discussed at greater length below, this claim ignores the plain language of Section 629 and congressional intent. The statute is clearly aimed at giving consumers the ability to access *MVPD service* on third-party equipment. Apps are advancing that goal. The Commission’s proposal and the Administration’s conclusory but flawed endorsement go far beyond that directive.

Finally, it is puzzling that NTIA would recognize the significant issues raised by the Commission’s proposal, and yet still plow ahead with its endorsement. For example, NTIA acknowledges the concerns that have been raised that “if competing navigation device providers were permitted to disregard the programming choices made by MVPDs or the agreements between MVPDs and programmers – such as by removing or replacing advertising – the ability to recover their costs might be weakened, which could ultimately have a deleterious effect on the

³⁸ See Letter from Lawrence E. Strickling, NTIA, to Chairman Tom Wheeler, FCC, MB Docket No. 16-42, at 3 (Apr. 14, 2016) (“NTIA Letter”).

³⁹ *Id.*

programming supply market, including for specialized and minority programming.”⁴⁰ Likewise, NTIA says that the Commission should take steps to ensure that its proposed approach “does not diminish existing privacy protections” for MVPD subscribers, and notes that the Commission’s proposed certification approach “leaves important questions to be addressed – most importantly, who will ensure compliance with a certification and through what legal authority.”⁴¹ Had NTIA had the benefit of a full record before hastily weighing in on such a complex topic, it would understand that there are *no* fixes for the contractual and privacy issues it noted in its letter or for the host of other issues catalogued below in these comments – all of which are of the Commission’s own making and will do irreparable harm to the video marketplace and consumers.

B. Comcast Is Strongly Committed To Deploying Apps on the Widest Possible Range of CE Devices, As Further Evidenced by Recent Announcements to Launch an HTML5-based Xfinity TV Partner Program and Apps Deals with Samsung and Roku.

Like other MVPDs, Comcast has embraced the apps revolution and is strongly committed to enabling Xfinity TV customers to access their subscription video services on customer-owned retail devices, and to expanding those device options. In this regard, as detailed below, Comcast puts forth principles to expand apps-based solutions, which could serve to advance the statutory goals while preserving the rights of content owners and Title VI protections.

Comcast has consistently pursued a strategy of extending its Emmy award-winning Xfinity TV app to a wide array of customer-owned devices. Xfinity TV customers with X1 DVR with cloud technology can stream their Xfinity TV channel lineup – including broadcast,

⁴⁰ *Id.* at 4.

⁴¹ *Id.* at 5.

non-broadcast, PEG, and on-demand choices – in IP to tablets, smartphones, and computers through the Xfinity TV app when connected to their in-home Xfinity network, and can stream or download their DVR recordings while connected to any Wi-Fi or mobile network.⁴² The apps are very popular with Comcast customers, and have been downloaded more than 23 million times.⁴³ Comcast customers used these apps and Xfinity TV website and portal to watch nearly 500 million hours of video in 2015 alone (up 51% in just one year). Comcast is also beginning to deliver Xfinity TV cable service without the need for a Comcast-supplied set-top box at all through the apps-based Stream⁴⁴ and Xfinity on Campus services.⁴⁵

Importantly, Comcast's Xfinity TV apps also ensure that cable service is delivered in compliance with its Title VI regulatory requirements, including privacy protections for customers' viewing history and other personally identifiable information, channel placement of broadcast stations, delivery of EAS messages, compliance with commercial time limits for children's programming, as well as closed captioning, video description, and other applicable accessibility requirements. Comcast's apps also fully implement the range of contractual requirements set out in Comcast's agreements with programmers, such as those relating to content security, geographic restrictions, copy restrictions, and the display, placement, and

⁴² See Overview of Cloud-Based DVR for X1, <http://customer.xfinity.com/help-and-support/cable-tv/x1-dvr-with-cloud-technology-available-features> (last visited Apr. 15, 2016).

⁴³ See Mark Hess, *FCC Action Could Stifle TV Innovation*, Comcast Voices (Jan. 28, 2016), <http://corporate.comcast.com/comcast-voices/fcc-action-could-stifle-tv-innovation>.

⁴⁴ See Stream TV, <https://www.xfinity.com/stream>; see also Matt Strauss, *Introducing a New Streaming TV Service from Comcast*, Comcast Voices (July 12, 2015), <http://corporate.comcast.com/comcast-voices/a-new-streaming-tv-service-from-comcast>.

⁴⁵ See Press Release, Comcast Corp., *Bringing TV to Every Screen for Colleges and Universities* (Aug. 21, 2014), <http://corporate.comcast.com/news-information/news-feed/comcast-brings-tv-to-every-screen-for-colleges-and-universities>; Marcien Jenckes, *Students at These College Campuses Will Stream TV for Free This Semester*, Comcast Voices (Sept. 9, 2015), <http://corporate.comcast.com/comcast-voices/xfinity-on-campus-expands-comcast-now-brings-streaming-tv-to-24-colleges-and-universities>.

branding of content. Thus, with the apps model, Comcast is able to provide programmers with the necessary assurances so they will continue to license the full range of content customers demand.⁴⁶

Moreover, these apps allow for rapid innovation and efficient network management. Comcast can quickly deploy new services and feature upgrades to its cable service through automatic app updates as the service evolves, without the need to change out equipment or a tech visit. In addition, the Xfinity TV apps communicate with Comcast's network backend, allowing Comcast to manage the efficient delivery of new video services to customers. Comcast frequently updates its apps to adapt to new and changing backend services. As a result, Comcast can capitalize on the latest technological advances and deploy them in a more accelerated and cost efficient manner. Customers, in turn, benefit from these innovations more quickly and more conveniently.⁴⁷

Building upon its commitment to providing customers with access to their Xfinity TV services across different device platforms, Comcast also is working on innovative solutions to expand the range of app-supported devices and deliver even more device choices for its customers. Comcast, like all video providers (MVPDs, OVDs, and programmers), initially focused on building customized apps for tablets and smartphones given their popularity with consumers. It has now turned its efforts to developing apps targeted at TVs and TV-connected devices to give customers even more choice in where and how they access their Xfinity TV cable service. As Comcast explained in its comments in response to the DSTAC Report, developing

⁴⁶ See Appendix A, Declaration of Tony G. Werner ¶ 4 ("Werner Decl."). According to one report, MVPD apps account for 9% of *all* programmer ad views. FreeWheel Video Monetization Report, Q4 2015, at 3, http://freewheel.tv/library/uploads/2016/03/Q4_2015_FreeWheel_Video_Monetization_Report.pdf.

⁴⁷ Werner Decl. ¶ 5.

apps in the TV space is challenging given the variety of operating systems used by different device manufacturers. Comcast is working to overcome these differences by developing an app that relies on open streaming standards developed through the W3C.

Just this week, following W3C's completion of the open HTML5 standard with premium video extensions, Comcast formally announced its new ground-breaking Xfinity TV Partner program to expand the range of retail devices customers can use to access their Xfinity TV cable services without the need to lease a set-top box.⁴⁸ By leveraging the open HTML5 standard, the Xfinity TV Partner Program provides a common framework to which smart TV, TV-connected and IP-enabled retail device manufacturers can build to make the Xfinity TV Partner app available to customers.⁴⁹

Samsung is the first smart TV manufacturer to join the program and is *already* working with Comcast on implementing the Xfinity TV Partner app on its TVs. Comcast expects growing interest from CE manufacturers, given that the video industry as a whole is coalescing around these streaming media standards that are already widely deployed on the web today.⁵⁰

⁴⁸ See Mark Hess, *Comcast Seeks TV and Other Consumer Electronics Partners to Bring Xfinity TV Cable Service to More Retail Devices*, Comcast Voices (Apr. 20, 2016), <http://corporate.comcast.com/comcast-voices/comcast-seeks-partners-to-bring-xfinity-tv-cable-service-to-more-retail-devices>; Press Release, Comcast Corp., *Comcast Launches Xfinity TV Partner Program; Samsung First TV Partner to Join* (Apr. 20, 2016), <http://corporate.comcast.com/news-information/news-feed/comcast-launches-xfinity-tv-partner-program-samsung-first-tv-partner-to-join>; Xfinity TV Partner Program, <https://developer.xfinity.com/cableapp> (last visited Apr. 21, 2016); see also Werner Decl. ¶ 6.

⁴⁹ While the Commission criticizes HTML5 because it “leav[es] total control of security of decisions to MVPDs,” HTML5-based apps actually are intended to support various DRM security solutions. *Notice* ¶ 57. But by that logic, the Commission’s *own proposal* suffers from the same “flaw.” See discussion *infra* Section VIII. Comcast has also been pursuing other HTML5-based app solutions through the Digital Living Network Alliance’s VidiPath initiative. VidiPath enables customers to stream cable service over the home network to VidiPath-compatible customer-owned devices via a downloaded HTML5-based MVPD app. See DSTAC Report at 41-42, <http://apps.fcc.gov/ecfs/document/view?id=60001515603>.

⁵⁰ See, e.g., Information About W3C and Encrypted Media Extensions (EME) March 2016, W3C, <https://www.w3.org/2016/03/EME-factsheet.html> (last visited Mar. 29, 2016); Jan Ozer, *HTML5 Comes of Age: It’s Finally Time to Tell Flash Good-bye*, Streaming Media (July/Aug. 2015), <http://www.streamingmedia.com/Articles/Editorial/Featured-Articles/HTML5-Comes-of-Age-Its-Finally-Time-to-Tell-Flash-Good-bye-105246.aspx>; Peter Bright, *Driven by Necessity, Mozilla to Enable HTML5 DRM in Firefox*,

Further endorsement of this HTML5-based approach is evidenced by the creation of the Consumer Technology Association’s Web Application Video Ecosystem (“WAVE”) – formerly known as the Global Internet Video Ecosystem (“GIVE”) – to promote the use of HTML5-based solutions across the video marketplace.⁵¹ In fact, Dr. Besen notes that the HTML5 standard “could also serve to start a ‘bandwagon’ in which manufacturers choose to produce devices that are ‘HTML5 compatible’ because they believe that others will also do so.”⁵²

While many TV and other device manufacturers already support HTML5, for those that do not, Comcast is open to working with them to explore customized versions of the app for their platforms as well. In this regard, Comcast and Roku announced an Xfinity TV Partner app for Roku devices, which are among the most popular streaming devices in the marketplace, based on Roku’s BrightScript language.⁵³ The app will enable Xfinity TV customers to enjoy their Xfinity TV cable service on their TVs via a Roku streaming player or directly on a Roku TV without a Comcast-supplied set-top box, much like the MVPD apps for the Roku platform that

Ars Technica (May 14, 2015), <http://arstechnica.com/information-technology/2014/05/driven-by-necessity-mozilla-to-enable-html5-drm-in-firefox/>; Peter Bright, *Netflix Coming to HTML5 Just as Soon as the DRM Ducks are in a Row*, Ars Technica (Apr. 15, 2013), <http://arstechnica.com/information-technology/2013/04/netflix-coming-to-html5-just-as-soon-as-the-drm-ducks-are-in-a-row/>. Notably, ATSC 3.0, the next-generation broadcasting system currently being developed in the Advanced Television Systems Committee, will utilize an HTML5 approach for presentation control of broadcast programming and to provide advanced personalization and interactivity features.

⁵¹ GIVE, <https://standards.cta.tech/kwspub/give/>; see also Press Release, Consumer Technology Association, Internet Video Leaders Announce Interoperability Effort (Dec. 22, 2015), <https://www.cta.tech/News/News-Releases/Press-Releases/2015-Press-Releases/Internet-Video-Leaders-Announce-Interoperability-E.aspx>; Troy Dreier, *CES ’16: The GIVE Project Aims to Push HTML5 Video Forward*, Streaming Media (Jan. 7, 2016), <http://www.streamingmedia.com/Articles/Editorial/Featured-Articles/CES-16-The-GIVE-Project-Aimsto-Push-HTML5-Video-Forward-108444.aspx>. WAVE includes leaders in content, infrastructure, technology, and TV displays.

⁵² Besen Decl. ¶ 14.

⁵³ Press Release, Comcast Corp., Comcast and Roku Bring Xfinity TV Partner App to Roku TVs and Roku Streaming Players (Apr. 20, 2016), <http://corporate.comcast.com/news-information/news-feed/comcast-and-roku-bring-xfinity-tv-partner-app-to-roku-tvs-and-roku-streaming-players>; see Mark Hess, *Comcast Seeks TV and Other Consumer Electronics Partners to Bring Xfinity TV Cable Service to More Retail Devices*, Comcast Voices (Apr. 20, 2016), <http://corporate.comcast.com/comcast-voices/comcast-seeks-partners-to-bring-xfinity-tv-cable-service-to-more-retail-devices>; see also Werner Decl. ¶ 6.

Time Warner Cable and Charter have deployed. This initiative further demonstrates Comcast's commitment to delivering consumer-driven device options and willingness and ability to engage with industry partners for customized Xfinity TV app solutions to make Xfinity TV cable service available on their platforms and devices.

C. Comcast Is Prepared To Abide By Apps-Related Principles.

The marketplace is already enthusiastically embracing apps, and MVPDs are already expanding their apps-based solutions to even more retail devices in response to these marketplace forces – without any of the harms detailed below that the Commission's Set-Top Box Mandate creates. Moreover, this approach has already received resounding endorsement and support from content producers, independent and diverse programming networks, bipartisan members of Congress, MVPDs, and many others.

To eliminate any doubt about the continued acceleration of apps, Comcast puts forth principles that will ensure (i) an open standards-based app is available to any interested third-party device manufacturer on commercially reasonable terms, and (ii) good faith negotiations on a customized app solution with device manufacturers that do not support that standard. Comcast believes these principles could serve to advance the goals of Section 629 while preserving the rights of content owners and Title VI protections. Below, we provide details of how these key principles would apply:

- *Development of Standards-Based App:* Comcast will make available an app based on an open standard ("Standards-Based App") that is licensable on commercially reasonable business terms to any interested third-party device maker.⁵⁴ Comcast will license the app at no cost as long as the device maker also provides access to its platform at no cost and does not require revenue-sharing. The business terms will ensure, among other things,

⁵⁴ Commercial reasonableness can be demonstrated by comparison to other popular video apps, since the business terms, testing, and other aspects of these principles are commonplace in the industry by OVD and other app developers.

that the retail device delivers Comcast's cable service intact and satisfies content security requirements.

- *Development of Customized Apps:* With respect to device platforms that, like Roku, support third-party apps and have an established market presence but utilize proprietary operating systems, Comcast will negotiate in good faith on customized app solutions for such platforms ("Customized App") that would be licensable on commercially reasonable business terms comparable to those for the Standards-Based App. Comcast will license the app at no cost as long as the device maker also provides access to its platform at no cost and does not require revenue-sharing.
- *Scope of Service Provided Through Standards-Based or Customized Apps:* Comcast apps will deliver Comcast's Xfinity cable service, including linear and VOD content, subject to (1) commercially reasonable business terms, (2) any rights or other limitations in its agreements with programmers/content owners, and (3) any technical limitations that may affect the ability to deliver elements of the service via the app (e.g., lack of device memory or processing power to run the app). The apps will also support Comcast's cloud DVR service on devices that meet commercially reasonable, objective, technical requirements necessary to support cloud DVR playback (e.g., device storage necessary to ensure a smooth playback viewing experience for consumers).
- *Compliance with Title VI Requirements:* Comcast's Standards-Based and Customized Apps will comply with all applicable Title VI requirements, such as privacy, EAS, accessibility, and children's programming ad limits.
- *Use of Commercially Available DRMs:* Comcast's Standards-Based and Customized Apps will utilize DRMs for app content security that are commercially available in the marketplace to third parties (e.g., Microsoft PlayReady and Adobe Access).
- *Testing/Certification:* Comcast will set commercially reasonable, objective criteria for device testing and certification to verify that its Standards-Based and Customized Apps are implemented properly on devices to ensure a quality consumer experience. Comcast will work in good faith to keep such testing and certification requirements to a minimum, and explore the possibility of self-certification and self-testing by device makers.
- *Website Information:* Comcast will provide information about its program for the Standards-Based App on its Xfinity TV Partner Program website,⁵⁵ including, among other things, a Comcast point-of-contact for device makers to contact if they are interested in participating in the program.

⁵⁵ See Xfinity TV Partner Program, <https://developer.xfinity.com/cableapp> (last visited Apr. 21, 2016).

The recent launch of Comcast’s Xfinity TV Partner Program – with Samsung as the first CE partner – and the announcement of the Xfinity app for Roku are clear evidence of the fruits of these strong principles.

In addition, although not required by Section 629, Comcast appreciates the interest by the Commission and others in enabling device search capabilities across apps. Today, retail devices like Roku, Apple, and Samsung compete and differentiate themselves in the marketplace through their topline or “umbrella” user interfaces that provide access to apps. Comcast is prepared to provide consumers with a capability to search through Comcast’s video assets from a device’s user interface with playback of a selected asset handled in the Xfinity app. However, in order to provide a cohesive customer experience, such integrated search needs to include more than just MVPD apps; it must also include similar data from OVD and other video apps as well.

IV. THE COMMISSION’S PROPOSAL IS BASED ON FLAWED INTERPRETATIONS OF SECTION 629 AND EXCEEDS THE COMMISSION’S AUTHORITY.

Somehow, the *Notice* looks at the vibrant video and device marketplace and concludes, astonishingly, that consumers have no competitive device options. Largely ignoring this evidence while at the same time acknowledging that MVPD-supplied apps are a “step in the right direction,” the *Notice* inexplicably concludes (going far beyond its authority) that there can only be a competitive device marketplace if third-party devices and apps can (1) present MVPD content using their own interfaces (rather than the MVPD’s interface) and (2) have no commercial relationship with the MVPD.⁵⁶ According to the *Notice*, the Set-Top Box Mandate

⁵⁶ See *Notice* ¶¶ 13-18; see also Remarks of Chairman Tom Wheeler, INCOMPAS Policy Summit, at 4 (Apr. 11, 2016), http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0411/DOC-338806A1.pdf (claiming that consumers “have no competitive choice”).

is needed to address this market failure.⁵⁷ The *Notice*'s analysis is fundamentally flawed and contrary to Section 629, and its proposed fix is well beyond the Commission's authority under Section 629 and other provisions of the Communications Act.

A. The *Notice* Improperly Finds Market Failure Based on a Flawed Reading of Section 629.

To justify its Set-Top Box Mandate, the *Notice* concludes that there is market failure based on two unsupported interpretations of Section 629. First, the *Notice* contends that giving device makers and app developers the ability to deploy their own user interfaces is somehow “essential” to meeting the goals of Section 629. Under this interpretation, because MVPD apps present the MVPD service using the MVPD's user interface, rather than user interfaces of third parties, MVPD apps do not meet the goals of Section 629. This interpretation is wrong as a legal matter. Of course, this is not what the statute says – or what it means. As detailed further below, Section 629 is aimed squarely at promoting the retail availability of *equipment* for consumers to use in lieu of leased set-top boxes to access the MVPD's video programming and other services. It has nothing to say about promoting competitive *user interfaces*.

The *Notice*'s interpretation is also not supported by marketplace evidence. The *Notice* points to “the few successes that developed in the CableCARD regime” – presumably a reference to TiVo – to support its claims about competitive user interfaces. Comcast has done more than any cable operator to support CableCARD devices,⁵⁸ but, by any measure, CableCARD has been a failure with consumers.⁵⁹ Today there are only a little over 600,000 CableCARDS used in

⁵⁷ See *Notice* ¶¶ 1, 12, 16, 25, 27.

⁵⁸ See Comcast Comments, MB Docket No. 15-64, at 12 (Oct. 8, 2015) (describing Comcast's CableCARD initiatives, including giving TiVo customers access to Comcast's VOD services on TiVo device and providing the first CableCARD per device at no charge, that go above and beyond the Commission's CableCARD rules).

⁵⁹ The Commission itself has acknowledged “the failure of the CableCARD solution to create a strong retail market for navigation devices.” *Video Device Competition Implementation of Section 304 of the*

customer-owned devices (representing about 1% of cable customers).⁶⁰ TiVo may be the most successful retail CableCARD device, but given its small market share, that hardly demonstrates success of a competitive user interface model.⁶¹ Roku, which is an *apps-based* platform – i.e., a platform on which Netflix, Amazon, Google, Hulu, Apple, and many other companies distribute their video programming and other services using their own branded apps and user interfaces – outsells TiVo devices 10 to 1. The *Notice* also ignores the fact that, under the apps model, retail devices can and do differentiate themselves with their interfaces through top-level menus, guides, and navigation tools – much as Roku, Apple, and Samsung⁶² have done – but MVPD and OVD services are presented using the MVPD’s or OVD’s user interface, not the device’s.⁶³

Telecommunications Act of 1996 Commercial Availability of Navigation Devices Compatibility Between Cable Systems and Consumer Electronics Equipment, Notice of Inquiry, 25 FCC Rcd. 4275 ¶ 8 (2010).

⁶⁰ *Notice* ¶ 7.

⁶¹ It also bears noting that, under the CableCARD model, retail devices could only present cable service using their own user interface given the technical limitations with CableCARD at the time the rules were adopted in 2003 (i.e., prior to MVPD apps). Consequently, the Commission cannot credibly claim that the device user interface was “essential to success” when that was the only approach allowed.

⁶² Samsung, for example, has invested heavily in its user experience and recently unveiled a new smart TV “Smart Hub” user interface, which “shifts away from multiple content sources and devices, to one integrated content and services platform” where “consumers will now be able to switch seamlessly between linear content, OTT content as well as other connected devices, including videogame consoles or Blu-ray players.” Press Release, Samsung Electronics, Samsung Electronics Introduces Advanced Smart TV User Experience (Jan. 4, 2016), <https://news.samsung.com/global/samsung-electronics-introduces-advanced-smart-tv-user-experience>.

⁶³ The *Notice* asserts that MVPDs may have “several incentives for maintaining control over the user interface,” and asks a series of questions about the ability of MVPDs to generate profits through such control. *See Notice* ¶ 15. The implication appears to be that there is something anti-competitive about MVPDs controlling the interface in this way. But the interface is how MVPDs – and OVDs for that matter – differentiate themselves in a highly competitive marketplace. For example, Comcast has its own distinctive Xfinity TV interface; Verizon has its FiOS interface; Dish controls the user interface on its Sling TV service; Netflix, Amazon, and YouTube have their own interfaces; and so on. And MVPDs and OVDs alike work to maintain their user interfaces across different platforms, ensuring that customers have a consistent experience and that the service is delivered as intended by the MVPD or OVD and consistent with contractual agreements with programmers (and in the case of MVPDs, regulatory obligations). There is nothing nefarious about MVPDs and OVDs differentiating themselves in this way and benefitting or profiting from these competitive distinctions. That is how a dynamic marketplace works. As Dr. Besen notes, “MVPDs and content providers are understandably concerned about how their programming might be presented on third-party devices under the Commission’s proposal. Most fundamentally, they are concerned that third parties could take actions that would adversely affect the demand for MVPD services . . . and fundamentally alter existing contractual arrangements, thus adversely affecting incentives to produce programming.” Besen Decl. ¶ 41.

Second, the *Notice* claims that there can only be a competitive device marketplace if device makers or app developers can build their devices and apps “without seeking permission from MVPDs.”⁶⁴ Again, this is not what the statute says – or what it means. In reaching this conclusion, the *Notice* erroneously interprets Section 629’s requirement that the Commission enable consumers to watch their MVPD services on devices offered by entities that are “not affiliated with any multichannel video programming distributor” to mean “entities that have *no business* relationship with any MVPD.”⁶⁵ This results-driven interpretation of the statute would lead to the illogical conclusion that *almost no retail devices in the marketplace today that are used to access MVPD service qualify as competitive navigation devices*. TiVo, Roku, and Samsung, among others, all have some type of business arrangement with MVPDs, so they would be disqualified. The same would arguably be the case with iOS and Android devices because MVPDs deploy their apps on these platforms pursuant to Apple’s and Android’s terms of service notwithstanding that service is provided to these devices without an MVPD-leased set-top box.⁶⁶ It is commonplace in the industry for app developers to enter into such business relationships with device manufacturers to ensure, among other things, technical compatibility, the integrity of their service, and a quality consumer experience. The notion that none of these devices that consumers purchase and use to access their MVPD services “count” for purposes of assessing navigation device competition simply by having *any* commercial agreement with an MVPD is pure fiction and completely divorced from the experienced reality of consumers, which is the focus of Section 629.

⁶⁴ The *Notice* asserts that “MVPDs offer products that directly compete with navigation devices and therefore have an incentive to withhold permission or constrain innovation,” frustrating the goals of Section 629. *Notice* ¶ 12.

⁶⁵ *Id.* ¶ 23 (emphasis added); *see also* 47 U.S.C. § 549.

⁶⁶ *See Notice* ¶ 23 & n.73.

Moreover, the *Notice*'s novel and unsupported interpretation of affiliation under Section 629 would mark a radical departure from the Commission's longstanding definition of "affiliate" under the Commission's navigation device rules, and how it has defined affiliation more generally in its cable and broadcast rules. The Commission's current navigation device rules define affiliate based on ownership or control of one entity over another.⁶⁷ The Commission has never interpreted affiliation to capture situations where one entity has *any* type of business relationship with another entity.⁶⁸ Even under the broader approach to affiliation taken in the Commission's broadcast attribution rules,⁶⁹ entities are not deemed to be affiliated solely because of a business relationship between them.⁷⁰

⁶⁷ See 47 C.F.R. § 76.1200(d) (defining "Affiliate" as "[a] person or entity that (directly or indirectly) owns or controls, is owned or controlled by, or is under common ownership or control with, another person . . ."). The Commission adopted the definition set out in Section 76.1200(d) in 1998, stating that "[w]e have decided, for present purposes, to define affiliation based on common ownership or control as defined in the notes accompanying 47 C.F.R. § 76.501. This rule has been used in both the cable television and broadcast contexts and has the advantage of being used and understood by participants in these markets." *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Report and Order, 13 FCC Rcd. 14775 ¶ 83 (1998). Section 76.501 and accompanying notes identify the ownership interests and relationships that confer an attributable interest for the purpose of several substantive rules applicable to cable operators; however, none of the criteria set forth in the rule and notes would create an attributable interest based solely on the existence of a business relationship, or an agreement, with an MVPD. See 47 C.F.R. § 76.501 note 2.

⁶⁸ Under such an interpretation, every single programming network an MVPD carries – except for PEG channels and must-carry broadcast stations – would be considered affiliated with an MVPD.

⁶⁹ Under these rules, an agreement between parties can create an attributable interest, but only in certain limited circumstances. Specifically, where one entity owns a TV station in a given market, and either (1) provides programming and ads for more than 15 percent of the broadcast time per week of another TV station in the same market (a local marketing agreement), or (2) sells more than 15 percent of the advertising time per week of another TV station in the same market (a joint sales agreement), the entity in question will be attributed with both stations for the purpose of the substantive broadcast ownership limits. See 47 C.F.R. § 73.3555 notes 2(j) & (k).

⁷⁰ Indeed, the Commission has generally stated that "[t]he mass media attribution rules seek to identify those interests in or relationships to licensees that confer on their holders a *degree of influence or control such that the holders have a realistic potential to affect the programming decisions of licensees or other core operating functions.*" *Review of the Commission's Regulations Governing Attribution of Broadcast and Cable/MDS Interests, Review of the Commission's Regulations and Policies Affecting Investment in the Broadcast Industry, Reexamination of the Commission's Cross-Interest Policy*, Report and Order, 14 FCC Rcd. 12559 ¶ 1 (1999) (emphasis added). "[A]t the same time," the Commission has noted, "*we must tailor the attribution rules to permit arrangements in which a particular ownership or positional interest involves minimal risk of influence, in order to avoid unduly restricting the means by which investment capital may be made available to the broadcast industry.*" *Id.* ¶ 5 (emphasis added)

There also is no support for the *Notice*'s allegation that MVPDs "have incentives to withhold permission and constrain device innovation."⁷¹ Rather, the marketplace shows just the opposite. Consumers are demanding the ability to access video services on IP-enabled devices, so Comcast and other MVPDs have strong incentives to make their full services available on retail devices, which are complements to MVPD service, to meet consumer demand for these new viewing options and improve the overall customer experience; otherwise, consumers will seek out other video choices from the various competitive alternatives that they have available to them as described above.⁷² As Dr. Besen observes, the growing deployment of apps on retail devices bears out these basic economic principles.⁷³

The *Notice*'s general distrust of commercial agreements is also out-of-step with marketplace developments. Today's vibrant video marketplace is founded on agreements among MVPDs, programmers, device manufacturers, and other participants in the video ecosystem. As explained further below, such agreements are essential to the vitality of the video ecosystem because they protect the value and security of content, ensure compliance with consumer protections and other regulatory requirements, and support the availability of high-quality content.⁷⁴ These agreements are not unique to MVPDs, but OVDs and apps developers more generally widely rely on them as well. If anything, these agreements foster innovation among all

⁷¹ *Notice* ¶ 12.

⁷² *See* Besen Decl. ¶¶ 9-13. In any event, there is no evidence of consumer demand for the type of solution the Commission is proposing. *See* discussion *infra* Section IV.C.

⁷³ It is also worth noting that Comcast has pursued business-to-business arrangements in the CableCARD space in an effort to improve that experience as well. The CableCARD regime limits retail devices to accessing one-way linear services, but Comcast voluntarily reached an agreement with TiVo to support VOD services on the TiVo platform as well and has launched that capability across its footprint. *See* Comcast Comments, MB Docket No. 15-64, at 12 (Oct. 8, 2015).

⁷⁴ *See* discussion *infra* Sections VII-IX.

market participants, and have helped drive the explosive growth in video device options for consumers.

B. The Commission’s Proposal Exceeds Its Authority Under Section 629.

The *Notice* points to Section 629 as the source of the Commission’s authority to adopt its sweeping Set-Top Box Mandate.⁷⁵ However, the notion that Section 629 empowers the Commission to force MVPDs to unbundle their service and provide new Commission-mandated standardized Information Flows for free to third parties so that the third parties can create their own separate, derivative services is flatly inconsistent with the plain language, prior judicial and Commission interpretations, and legislative history of the statute.⁷⁶ Section 629 makes clear that Congress intended to promote the retail availability of new equipment used by consumers to access *an MVPD’s services* over the MVPD’s network, not mandate the unbundling of an MVPD’s content to favor competing third-party video distribution *services*.⁷⁷ In short, the Commission’s proposal far exceeds the bounds of its rulemaking authority.

In pertinent part, Section 629(a) provides that the Commission is authorized to adopt regulations that assure the commercial availability of “converter boxes, interactive communications equipment, and *other equipment* used by consumers *to access multichannel video programming and other services offered over multichannel video programming systems*.”⁷⁸

⁷⁵ See *Notice* ¶ 21.

⁷⁶ The Set-Top Box Mandate is similar in all key respects to the AllVid proposal the Commission considered nearly six years ago and declined to adopt. Like the AllVid proposal the Commission abandoned, the Set-Top Box Mandate would require the disaggregation of MVPD service and require MVPDs to create a new in-home device for delivering video streams to third-party devices and apps. See *Video Device Competition; Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment*, Notice of Inquiry, 25 FCC Rcd. 4275 (2010) (“*AllVid NOP*”).

⁷⁷ See also discussion *supra* Section IV.A (noting that Section 629 also does not address competitive user interfaces).

⁷⁸ 47 U.S.C. § 549(a) (emphasis added). The title of Section 629(a) further underscores that the provision is designed to encourage the “[c]ommercial consumer availability of equipment used to access services *provided by multichannel video programming distributors*.” *Id.* (emphasis added)

The statute is thus clear on its face that Section 629(a) is intended to ensure that consumers have retail *equipment* alternatives available in order to access their MVPD service as offered and delivered by the MVPD, instead of having to lease a set-top box from the MVPD. As discussed above, MVPD apps are already being widely deployed and downloaded to allow customers to watch their MVPD service as intended by the provider on an array of retail devices. In contrast, the Commission’s proposal would have the opposite effect, by declining to support certain MVPD features through the Information Flows and by allowing third parties to offer their own derivative services and to block or remove aspects of MVPD service from such derivative services, thereby actually *preventing* consumers from accessing “MVPD services” as the statute intended.

Both the D.C. Circuit and the Commission have recognized this intended purpose of the statute as ensuring alternative equipment for accessing MVPD services and not on facilitating the creation of alternative services. The court previously acknowledged that Congress adopted Section 629 to create a separate market for navigation devices that offer access to MVPD service.⁷⁹ Likewise, the Commission has consistently observed that “[t]he purpose of Section 629 . . . is to expand opportunities to purchase this equipment from sources other than the service provider.”⁸⁰ In its *Gemstar Order*, the Commission articulated this view even more definitively when the Commission agreed with a cable operator that “the navigation device rules relate to

⁷⁹ See, e.g., *EchoStar Satellite L.L.C. v. FCC*, 704 F.3d 992, 995 (D.C. Cir. 2013) (“Traditionally, cable television subscribers leased their navigation devices directly from their cable providers. But Congress, anxious to create separate market for navigation devices and cable television services, added § 629 to the Communications Act.”) (internal citations omitted).

⁸⁰ *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Report and Order, 13 FCC Rcd. 14775 ¶ 1 (1998); see also *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Order on Reconsideration, 14 FCC Rcd. 7596 ¶ 12 (1999) (“The objective of Section 629 is to open new competitive outlets for devices that have in the past tended to be exclusively available from or under the control of service suppliers.”).

competition in equipment, not services.”⁸¹ The Commission emphatically concluded that “Section 629 is intended to assure the competitive availability of *equipment*, including *converter boxes*, interactive communications *equipment*, and other *equipment* used by consumers to access multichannel video programming and other services offered over multichannel video programming systems.”⁸²

The legislative history accompanying Section 629 further confirms Congress’s intent to limit the scope of the statute and the Commission’s rulemaking authority to promoting *retail devices* that receive services “*provided by*” MVPDs. Broader language in the House version of what ultimately became Section 629(a) envisioned promoting access to not only MVPD services, but also to other third-party video and data services from other distributors.⁸³ However, Congress considered and expressly rejected this broad construction in the final bill, explaining that “[t]he scope of the regulations” in Section 629 was “*narrowed to include only equipment used to access services provided by multichannel video programming distributors.*”⁸⁴

⁸¹ *Gemstar International Group, Ltd. and Gemstar Development Corp. Petition for Special Relief; Time Warner Cable Petition for Declaratory Ruling*, 16 FCC Rcd. 21531 ¶ 30 (2001) (“*Gemstar Order*”) (finding that Section 629 should not be construed to treat electronic program guides as “navigation devices” – much less to require cable operators to carry data for third-party guides).

⁸² *Id.* ¶ 31 (emphases in the original). Section 629 also does not address accessing MVPD service on standalone third-party *apps*. The Commission’s attempt to stretch the meaning of navigation devices to sweep in such apps – *even if they are not connected at all to any equipment provided to consumers* – underscores how divorced the Commission’s proposal is from Section 629’s statutory language and purpose. *See Notice* ¶ 22.

⁸³ Specifically, the draft would have authorized the Commission “to assure competitive availability, to consumers of *telecommunications subscription services*,” of third-party equipment used in connection with these services. *See* H.R. 1555, 104th Cong. § 203 (1995) (emphasis added). “Telecommunications subscription services” was broadly defined to include “the provision directly to subscribers of video, voice, or data services for which a subscriber charge is made.” *Id.*

⁸⁴ *See* H.R. Rep. No. 104-458, at 180-81 (1996) (emphasis added). Section 629(f) reinforces a narrow scope of the Commission’s rulemaking authority, stating that “[n]othing in this section shall be construed as expanding or limiting any authority the Commission may have under law in effect before [enactment of the Telecommunications Act of 1996].” 47 U.S.C. § 549(f) (emphasis added).

Section 629 simply cannot be read to impose a silent unbundling and forced access mandate specified in the Commission’s proposal. Where Congress has imposed unbundling mandates in other contexts, it has done so explicitly, such as the unbundled network elements and unbundled subscriber list information addressed in the same law – the 1996 Telecommunications Act – in which Section 629 was enacted.⁸⁵ But that is not the case here. Nothing in Section 629 even alludes to unbundling an integrated MVPD service into government-mandated components in order to promote third-party video services. In fact, the *only* service to which Section 629 is intended to provide access is service “provided by MVPDs.”⁸⁶ Consequently, for the Commission to now discover 20 years later a silent unbundling mandate in Section 629 would be a clear misreading of the statute, as well as a significant course reversal from prior Commission precedent and in conflict with congressional intent.⁸⁷

⁸⁵ See, e.g., 47 U.S.C. § 251(c)(3) (establishing “[t]he duty to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory”); *id.* § 222(e) (“[A] telecommunications carrier that provides telephone exchange service shall provide subscriber list information gathered in its capacity as a provider of such service on a timely and unbundled basis, under nondiscriminatory and reasonable rates, terms, and conditions, to any person upon request for the purpose of publishing directories in any format.”).

⁸⁶ As detailed below, the proposed rules would allow third parties to strip out core features that comprise MVPD service – and enable MVPDs to differentiate themselves in a highly competitive marketplace – thus actually preventing access to MVPD service, contrary to Section 629. MVPD service cannot be reduced to video programming alone. The definition of “cable service” (which is a subset of MVPD service) makes this clear. Cable service includes not only video programming, but also “other programming service[s]” and “subscriber interaction, if any, which is required for the selection or use of such video programming or other programming service.” 47 U.S.C. § 522. Thus, taken together with this statutory definition, Section 629’s use of “multichannel video programming services offered over multichannel video programming systems” is meant to encompass more than just the video components of the MVPD service made available to customers.

⁸⁷ As other parties have explained, the Commission’s reliance on *Carterfone* is incorrect and misleading. See Fact Sheet, *FCC Chairman Proposal To Unlock The Set-Top Box: Creating Choice & Innovation* 3 (Jan. 27, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-337449A1.pdf; see also *Use of Carterfone Device in Message Toll Service*, Opinion, 13 F.C.C.2d 420 (1968) (“*Carterfone*”). *Carterfone* established a right to attach third-party phone *equipment* that subscribers could use to access their phone service over the telephone company’s network. It did *not* require phone companies to reengineer their phone service by disaggregating it into separate piece parts. *Carterfone* therefore provides no support for the type of unbundling and disaggregation mandate contemplated by the Commission’s proposal, and, if anything, supports the limited scope of the Commission’s rulemaking authority

Beyond the clear statutory limits on the Commission’s authority, the D.C. Circuit expressly warned the Commission in the 2013 *EchoStar* decision against “unbridled” interpretations of Section 629.⁸⁸ In invalidating encoding and other rules adopted previously pursuant to the Commission’s Section 629 authority, the court stated that the Commission “cannot simply impose any regulation . . . as a means of promoting the commercial availability of navigation devices, no matter how tenuous its actual connection to [Section] 629’s mandate” and that the Commission’s authority outlined in the statute “is not as capacious as the agency suggests.”⁸⁹ The Commission’s disaggregation mandate would go well beyond the rules at issue in *EchoStar*, and would ignore the court’s explicit warning.⁹⁰

Nor does STELAR empower the Commission to adopt its Set-Top Box Mandate. In STELAR, Congress simply directed the Commission to create an advisory committee (later known as DSTAC) to issue a report on downloadable security. That is all. In fact, an amendment was discussed during Senate consideration of STELAR that would have directed the Commission to initiate a follow-on rulemaking on a proposal similar to the Set-Top Box Mandate, but that amendment was withdrawn.⁹¹ The Commission cannot read into this very narrow directive in the final legislation a mandate to re-make the MVPD marketplace.

under Section 629 as covering *equipment*, not services. See NCTA Reply Comments, MB Docket 15-64, at 21-24 (Nov. 9, 2015) (“NCTA Reply Comments”); Letter from Neal M. Goldberg, Vice President & General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 4 (Dec. 22, 2015).

⁸⁸ See *EchoStar*, 704 F.3d at 997.

⁸⁹ *Id.* at 997-98.

⁹⁰ As detailed below, Section 629(b) prohibits the Commission from prescribing rules such as those it has proposed in the *Notice* that jeopardize the security of MVPD programming and services. See discussion *infra* Section VIII; 47 U.S.C. § 549(b).

⁹¹ See John Eggerton, *STAVRA Bill Passes Senate Commerce*, Multichannel News (Sept. 17, 2014), <http://www.multichannel.com/news/policy/stavra-bill-passes-senate-commerce/383940>; John Hendel, *Senate Commerce Clears STELA Reauthorization Bill with Little Fanfare*, Communications Daily (Sept. 18, 2014); see also John Eggerton, *Amendments for Satellite Bill Teed Up*, Broad. & Cable (Sept. 15, 2014), <http://www.broadcastingcable.com/news/washington/amendments-satellite-bill-teed/134062>.

Moreover, the Commission’s expansive proposal is in clear conflict with the *deregulatory* thrust of STELAR, which included a bipartisan agreement to repeal the costly and highly prescriptive integration ban.

C. The Set-Top Box Mandate Is in Clear Conflict with Other Provisions of the Communications Act.

The Commission’s proposal not only exceeds its authority under Section 629, but it also violates other provisions of the Communications Act by subjecting MVPDs to common carrier regulation and by improperly interfering with the provision and content of cable service.

1. The Set-Top Box Mandate Would Violate Section 621(c) by Imposing Common Carrier Obligations on MVPDs.

By forcing MVPDs to unbundle their services into Commission-prescribed components and make those available to third-party device manufacturers and app developers, the Commission’s proposal would contravene Section 621(c) of the Communications Act, which explicitly prohibits the Commission from subjecting cable systems “to regulation as a common carrier . . . by reason of providing any cable service.”⁹² Yet, this is precisely what the *Notice* envisions and intends as its proposal would force MVPDs “to offer service indiscriminately and on general terms,” leaving no “room for individualized bargaining and discrimination and terms.”⁹³

It is indisputable that one of the Commission’s key goals of its proposal is to eliminate any role for MVPDs in the presentation of their service on third-party devices and apps.⁹⁴ Under

⁹² 47 U.S.C. § 541(c).

⁹³ *Verizon v. FCC*, 740 F.3d 623, 652 (D.C. Cir. 2014) (quoting *Cellco P’ship v. FCC*, 700 F.3d 534, 547-48 (D.C. Cir. 2012)).

⁹⁴ *Notice* ¶ 12; *see also id.* ¶ 28 (stating that “unaffiliated vendors must be able to build competitive navigation devices, including applications, without first obtaining approval from MVPDs”).

the proposal, MVPDs must hand over the Commission-mandated Information Flows indiscriminately to third parties, and are precluded, for example, from any participation in implementing the content security systems,⁹⁵ the testing and certification of devices,⁹⁶ or even how MVPD content is displayed by third parties to customers.⁹⁷ MVPDs would be effectively relegated to mere wholesale providers of raw programming streams, entitlement data, service discovery and guide data, and other components of their services without the ability to negotiate the terms or conditions and without any compensation from third parties. Like other common carriers, cable operators would be barred from “mak[ing] individualized decisions, in particular cases, whether and on what terms to deal.”⁹⁸ The Supreme Court has spoken clearly on this point when overturning a prior Commission attempt to impose these sort of forced access obligations on cable operators, stating that “[t]he Commission may not regulate cable systems as common carriers.”⁹⁹

2. *The Set-Top Box Mandate Would Regulate the Provision and Content of Cable Service in Violation of Section 624(f).*

Pursuant to Section 624(f) of the Act, the Commission is barred from imposing “requirements regarding the provision or content of cable services, except as *expressly provided* in [Title VI].”¹⁰⁰ Nothing in Title VI “expressly provides” for the Commission’s proposal.

⁹⁵ *Id.* ¶ 59 (ensuring that third parties “will not need to seek approval, review, or testing from the MVPDs themselves” when licensing a security solution and that such a solution must involve a trust authority that is not substantially controlled by an MVPD).

⁹⁶ *Id.* ¶ 72 (requiring that testing be performed by a “qualified test facility” and that MVPDs not have their own testing and certification processes).

⁹⁷ *See, e.g., id.* ¶ 15 (depriving MVPDs of control over the user interface through which customers access their MVPD programming services).

⁹⁸ *NARUC v. FCC*, 525 F.2d 630, 641 (D.C. Cir. 1976).

⁹⁹ *FCC v. Midwest Video Corp.*, 440 U.S. 689, 709 (1979) (overturning Commission rules that required cable operators to dedicate channels for PEG). Congress, however, subsequently amended the statute to address PEG obligations for MVPDs. *See* 47 U.S.C. § 531.

¹⁰⁰ 47 U.S.C. § 544(f)(1) (emphasis added).

However, requiring cable operators to break apart their service so that third parties can repackage it into a separate service directly and unassailably affects the provisioning (i.e., the delivery) and the content of cable services. As detailed below, the proposal would impact the provisioning of cable service by permitting third parties to alter the integrated suite of services and features that comprise cable service; enabling third parties to overlay or replace advertisements included with the programming in the cable service; and impeding the rollout of new products and services offered as part of the service.

The *Notice* also inquires whether the Commission may rely on Section 624A to adopt its proposed rules.¹⁰¹ But the Commission’s proposal fares no better under this provision, which authorizes the Commission to enact rules that assure the “compatibility between televisions and video cassette recorders and cable systems.”¹⁰² The proposal is simply unrelated to these analog-era technologies, and encompasses all MVPDs, not just cable operators.¹⁰³ Importantly, echoing the limitations in Section 624(f), Section 624A(c)(2)(D) expressly prohibits regulations such as the ones proposed by the Commission that “affect features, functions, protocols, and other product and service options” of cable services.¹⁰⁴

¹⁰¹ *Notice* ¶ 24.

¹⁰² 47 U.S.C. § 544a(b)(1).

¹⁰³ The *Notice* suggests that Section 624A(d) authorizes the Commission to apply its rules to “successor technologies.” See *Notice* ¶ 24 n.77. But this provision does not empower the Commission to adopt *any* equipment regulation to account for changes in technology. Rather, Section 624A(d) is expressly limited to “modify[ing] *the regulations issued pursuant to this section . . . to reflect improvements and changes in cable systems, television receivers, video cassette recorders, and similar technology.*” 47 U.S.C. § 544a(d) (emphasis added). Given this limitation, Section 624A cannot be read to empower the Commission to adopt its proposed rules.

¹⁰⁴ 47 U.S.C. § 544a(c)(2)(D). Moreover, as part of its findings included in Section 624A, Congress specifically concluded that “compatibility among televisions, video cassette recorders, and cable systems can be assured with *narrow technical standards that mandate a minimum degree of common design and operation, leaving all features, functions, protocols, and other product and service options for selection through open competition in the market.*” *Id.* § 544a(a)(4) (emphasis added). Consequently, assuming that Section 624A did provide the Commission with a source of authority to adopt rules, the Commission’s proposal involves a degree of government intervention well beyond what Congress contemplated when adopting Section 624A.

V. THE PROPOSAL HAS NUMEROUS OTHER LEGAL INFIRMITIES.

In addition to exceeding the Commission's authority under Section 629 and contravening other provisions of the Communications Act, the Set-Top Box Mandate would also conflict with copyright and other intellectual property protections; violate the First Amendment rights of MVPDs and programmers; and is arbitrary and capricious.

A. The Set-Top Box Mandate Conflicts With the Copyright Act and Other Intellectual Property Protections.

The *Notice* asserts that “unaffiliated vendors . . . must respect licensing terms regarding copyright, entitlement, and robustness,” and that “nothing in our proposal will change or affect content creators’ rights or remedies under copyright law.”¹⁰⁵ It also seeks comment on “the extent to which copyright law may protect against” programmers’ concerns about disaggregation and repackaging of content.¹⁰⁶ Far from resolving these concerns, the Commission’s proposal contravenes typical provisions in programming agreements between programmers and MVPDs and conflicts with well-established principles of copyright law, depriving programmers and MVPDs of the right to control how their original content is published and used and enabling the creation of unauthorized “derivative works.”¹⁰⁷ The Set-Top Box Mandate also conflicts with trademark law and would likely result in costly patent litigation.

¹⁰⁵ *Notice* ¶¶ 29, 80.

¹⁰⁶ *Id.* ¶ 80.

¹⁰⁷ The Copyright Act defines a “derivative work” as a “work based upon one or more preexisting works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which a work may be recast, transformed, or adapted. A work consisting of editorial revisions, annotations, elaborations, or other modification which, as a whole, represent an original work of authorship” 17 U.S.C. § 101.

1. *The Proposal Would Abrogate Copyright Owner Rights and Facilitate Adoption and Use of Infringing Products.*

The Copyright Act vests in copyright owners “an exclusive bundle of rights, including the exclusive rights to do and to authorize the reproduction, distribution, public performance and public display of their copyrighted works, as well as the preparation of derivative works.”¹⁰⁸ In pertinent part, a copyright owner’s exclusive distribution and public performance rights are broadly construed and encompass the right to control every distribution and every public performance (including every digital transmission to the public) of a copyrighted work.¹⁰⁹ These protections, along with a copyright owner’s other exclusive rights, “assure[] authors the right to their original expression,” thereby supporting continued production of creative works and “promot[ing] the Progress of Science and useful Arts.”¹¹⁰

Accordingly, to provide copyrighted content to their subscribers, MVPDs must obtain a license from copyright owners.¹¹¹ By mandating that MVPDs transmit copyright owners’

¹⁰⁸ 17 U.S.C. § 106(1)-(4). The Copyright Act defines public performance to include actions that “transmit or otherwise communicate a performance or display of the work . . . to the public, by means of any device or process, whether the members of the public capable of receiving the performance or display receive it in the same place or in separate places and at the same time or at different times.” *Id.* § 101.

¹⁰⁹ See, e.g., 2 Nimmer on Copyrights § 8.11(B)(4)(d) (2015) (stating that under the 1976 Copyright Act, “[t]he distribution right accorded by Section 106(3) is to be interpreted broadly, consonant with the intention expressed by its drafters” and that “[i]t extends to [any] offer to the general public to make a work available for distribution without permission of the copyright owner”); *Am. Broad. Cos., Inc. v. Aereo, Inc.*, 134 S. Ct. 2498, 2506 (2014) (“[T]he concep[t] of public performance . . . cover[s] not only the initial rendition or showing, but also any further act by which that rendition or showing is transmitted or communicated to the public.”) (quoting H.R. Rep. No. 94-1476, at 63).

¹¹⁰ *Feist Publ’ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 349-50 (1991) (quoting U.S. Const. art. I, § 8, cl. 8); see also *Fogerty v. Fantasy, Inc.*, 510 U.S. 517, 527 (1994) (observing that “copyright law ultimately serves the purpose of enriching the general public through access to creative works”).

¹¹¹ As explained further below, see discussion *infra* Section VII, programming agreements (i.e., the private copyright licenses between MVPDs and content owners) typically cover a wide range of affirmative conditions, including security, channel placement in the programming guide, tier placement of the channel, content description in the guide, advertising and other content-associated requirements. These conditions are all material to the grant of the copyright license, and the ability of copyright owners to limit the copyright license in this manner directly relates to the copyright owners’ right and ability to maximize the value of their works. See 3 Nimmer on Copyrights § 10.10[C] (2015) (“[A] copyright proprietor must be allowed substantial freedom to limit licenses to perform his

content to third-party navigation devices without authorization from the copyright owner and without respecting several critical copyright license conditions, the Set-Top Box Mandate would effectively provide a zero-cost compulsory copyright grant to the third-party manufacturers of such devices, as it is unrealistic for copyright owners to simply decline to license their content to MVPDs altogether.¹¹² Furthermore, such third parties will have no contractual relationship with the MVPDs or copyright owners. As such, neither the MVPDs nor copyright owners will be able to enforce the requirements that were material conditions to copyright owners' decision to license the content for transmission to MVPD subscribers in the first place. This is an impermissible abrogation of programmers' exclusive copyright rights to decide who may exploit their content, and the conditions of that exploitation.¹¹³

Moreover, this loss of creative control over the presentation and branding of content, as well as the advertising associated with that content, would greatly diminish the value of the content and undercut the business models that content owners rely on to fund investment in high-quality programming.

In addition, as discussed further below in Section VIII, the Commission's proposal will create a content distribution framework that is less secure than current MVPD systems. As a result, the system through which massive amounts of high-value copyrighted content constantly

work in public to defined periods and areas or audiences") (quoting *United Artists Television, Inc. v. Fortnightly Corp.*, 377 F.2d 872, 882 (2d Cir. 1967), *rev'd on other grounds*, 392 U.S. 390 (1968)).

¹¹² In addition, such disaggregation and repackaging of MVPD content would undermine "a complex, highly detailed compulsory licensing scheme that sets out the conditions, including the payment of compulsory fees, under which cable systems may retransmit broadcasts." *Am. Broad. Cos.*, 134 S. Ct. at 2506 (citing 17 U.S.C. § 111).

¹¹³ Additionally, requiring MVPDs to transmit the programmers' content to unapproved devices may also constitute direct copyright infringement. *See, e.g., McRoberts Software, Inc. v. Media 100, Inc.*, 329 F.3d 557 (7th Cir. 2003) (defendant liable for copyright infringement for exceeding the scope of its license by making licensed software available for use in hardware not permitted by the licensor).

flows will be more vulnerable to unauthorized use.¹¹⁴ Given that the programmers will have no contractual recourse against such third parties, the proposed order may result in copyright infringement claims and litigation simply to enforce the agreed-upon limits on use of the content between the programmers and MVPDs.¹¹⁵

It is, therefore, no answer for the *Notice* to suggest that programmers and MVPDs retain “rights or remedies under copyright law” to sue third parties for infringing uses of their content.¹¹⁶ Relying on private copyright litigation to address problems of the Commission’s own making is not lawful – it would leave a conspicuous gap in the proposed rules that would shift substantial legal costs and burdens onto programmers and MVPDs. Chairman Wheeler’s initial response that program licensing arrangements should somehow remain “sacrosanct and untouched” simply because “copyright law remains in place” does little to allay these concerns and underscores how the Commission’s proposal would introduce new risks of harm while leaving the legal system to clean up the mess through litigation.¹¹⁷ Such a sweeping deprivation of programmers’ exclusive rights to control the distribution and performance of their copyrighted works cannot be squared with federal law and policy.¹¹⁸

¹¹⁴ Those additional uses could be of the sort that, had they been authorized, would have triggered payments from the copyright owners to individual actors, writers and other profit participants. Those individual creators depend on such deferred compensation to sustain their livelihood. The unauthorized and uncompensated uses could act as substitutes for authorized alternatives, which would result in reduced overall payments to individual creators.

¹¹⁵ Depending on the circumstances, such claims may take the form of indirect infringement claims asserting that the third parties have induced or contributed to the end-users’ unauthorized reproductions, distributions or transmissions of the content. Additionally, given the lack of other available remedies, the proposed order could unnecessarily create an environment in which rights holders might need to consider whether to bring claims against end-users themselves.

¹¹⁶ *Notice* ¶ 80.

¹¹⁷ See Oversight of the Federal Communications Commission: Hearing Before the S. Comm. on Commerce, Sci., & Transp., 114th Cong. (2016) (statement of Federal Communications Commission Chairman Tom Wheeler).

¹¹⁸ See, e.g., *Can-Am Plumbing, Inc. v. NLRB*, 321 F.3d 145, 153 (D.C. Cir. 2003) (A government agency may not exercise its authority “so single-mindedly that it may wholly ignore other and equally important Congressional objectives.”) (quoting *Southern S.S. Co. v. NLRB*, 316 U.S. 31, 47 (1942); *Storer Commc’ns, Inc. v. FCC*, 763 F.2d

2. *The Set-Top Box Mandate Deprives MVPDs of Copyright Interests In Their Own Creative Works and Forces Them To Infringe on the Copyright Interests of Guide Data Providers.*

Beyond infringing on programmers' copyrights, the proposal also deprives MVPDs of copyright interests in their own creative works by interfering with their creative judgment in the selection and arrangement of content and illegally mandating a new ecosystem in which third parties are permitted to break up and recast discrete components of each MVPD's distinctive bundle of programming and user interface, which together comprise its service. MVPDs compete for subscribers, in large part, based on their respective service offerings, including bundles of programming, channel tiers, and other unique combinations of content that are not available from other service providers. These decisions involve original creative expression, which makes MVPD programming packages "collective works" and "compilations" protected under copyright law.¹¹⁹ Further, MVPDs have a protected copyright interest in the "look and feel" of their service offerings, which include their user interfaces.¹²⁰ Yet, the proposal would invite third-party device manufacturers and app developers to create unauthorized derivative works by stripping out certain MVPD-selected content and altering the presentation of other content to create a separate service of their own.¹²¹

436, 443 (D.C. Cir. 1985) ("The Commission has a duty to implement the Communications Act but also must attempt to do so in a manner as consistent as possible" with other federal laws.).

¹¹⁹ A "collective work" is "a work . . . in which a number of contributions, constituting separate and independent works in themselves, are assembled into a collective whole." 17 U.S.C. § 101. A "compilation" is "a work formed by the collection and assembling of preexisting materials or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship." *Id.*

¹²⁰ See, e.g., *Lotus Dev. Corp. v. Paperback Software Int'l*, 740 F. Supp. 37, 55 (D. Mass. 1990) (copyright protection extends to the "look and feel" of a computer program's interface); *Mistretta v. Curole*, 22 U.S.P.Q.2d (BNA) 1707, 1708 (E.D. La. 1992) (concluding that the "look and feel" of a work of art was worthy of copyright protection); ; *Goldman v. Healthcare Mgmt. Sys., Inc.*, 628 F. Supp. 2d 748 (W.D. Mich. 2008) (stating that copyright protection can apply to, among other things, screen displays and main menus).

¹²¹ See, e.g., *Roy Export Co. Establishment of Vaduz, Liech. v. CBS, Inc.*, 672 F.2d 1095, 1103 (2d Cir. 1982) (finding that the plaintiff's selection of unprotected Charlie Chaplin film clips constituted a protectable original creative work); see also *Eckes v. Card Prices Update*, 736 F.2d 859, 863 (2d Cir. 1984) (finding copyright

In addition, MVPDs would be forced to infringe on the copyright interests of third-party guide data providers – and to breach these licensing agreements – by delivering Service Discovery Data to third parties. While the *Notice* contemplates that third-party device manufacturers and app developers would purchase detailed program description guide data from third-party providers,¹²² the *Notice* fails to appreciate that much of the mandatory Service Discovery Data (like program start and stop times, rating and parental control information, certain other program description information, etc.) *is supplied by the guide data providers, not MVPDs*. Comcast, for example, receives only very limited programming information for its VOD content directly from programmers. Guide data providers supply all other program information to Comcast, including all guide data for linear channels, pursuant to licensing agreements that prohibit the redistribution of such information. The *Notice* should not put MVPDs in a position where they are forced to breach their contractual obligations and infringe on guide data providers' copyright interests.

3. *The Set-Top Box Mandate Conflicts with Trademark Law and Would Result in Costly Patent Litigation.*

One of the fundamental principles of trademark law, codified in the federal Lanham Act, is that no person shall use, reproduce, or imitate a protected mark identifying goods or services when “such use is likely to cause confusion, or to cause mistake, or to deceive.”¹²³ Here, the

enforceable where owner “exercised selection, creativity and judgment in choosing among the 18,000 or so different baseball cards”).

¹²² See *Notice* ¶ 38.

¹²³ 15 U.S.C. § 1114(1)(a); see also *Original Appalachian Artworks, Inc. v. Granada Elecs., Inc.*, 816 F.2d 68, 71 (2d Cir. 1987) (noting that the Lanham Act “prohibits the unauthorized sale of goods bearing a registered trademark where there is a likelihood of confusion, mistake, or deception of purchasers”); *El Greco Leather Prods. Co. v. Shoe World, Inc.*, 806 F.2d 392, 395 (2d Cir. 1986) (“One of the most valuable and important protections afforded by the Lanham Act is the right to control the quality of the goods manufactured and sold under the holder's trademark.”)

Commission’s Set-Top Box Mandate would allow “entities that have no business relationship with any MVPD”¹²⁴ to repackage programming and services as their own without seeking “approval, review, or testing” by MVPDs to ensure quality and reliability.¹²⁵ At a minimum, consumers will face confusion as to whether their MVPD “sponsored or otherwise approved the use of”¹²⁶ retail apps or devices, and many subscribers will continue to contact their MVPD for technical support if they experience problems accessing content with such apps or devices.¹²⁷ Furthermore, the Commission’s proposal will almost certainly cause the separate harm of trademark dilution, either by “whittling away” at the selling power and value of MVPDs’ marks or by “tarnish[ing]” those marks by causing them to be “linked to products of shoddy quality” that the MVPD did not choose or approve.¹²⁸

Moreover, the Commission’s reliance on “open standards bodies,”¹²⁹ described further below,¹³⁰ to issue specifications for Service Discovery, Entitlement, and Content Delivery Information Flows will invite extensive patent litigation, imposing unnecessary costs on

¹²⁴ Notice ¶ 23.

¹²⁵ See *id.* ¶ 59.

¹²⁶ See, e.g., *Dallas Cowboys Cheerleaders, Inc. v. Pussycat Cinema, Ltd.*, 604 F.2d 200, 205 (2d Cir. 1979) (“The public’s belief that the mark’s owner sponsored or otherwise approved the use of the trademark satisfies the confusion requirement.”).

¹²⁷ Courts have frequently found trademark infringement where customers have difficulty distinguishing which company is responsible for the good or service at issue and direct complaints to the wrong company. See, e.g., *Scandia Down Corp. v. Euroquilt, Inc.*, 772 F.2d 1423, 1431 (7th Cir. 1985) (“The district court heard much evidence that customers came to [plaintiff’s] shops to complain about goods and services they had received (or not received) from [defendant.]”); *ConAgra, Inc. v. Singleton*, 743 F.2d 1508, 1515 n.10 (11th Cir. 1984) (“customers complain[ed] about shrimp purchased from a grocery chain that sold the products of Singleton Packing, not Singleton Shrimp Boats”); *Visa Int’l Serv. Ass’n v. VISA/Master Charge Travel Club*, 213 U.S.P.Q. (BNA) 629, 633 (N.D. Cal. 1981) (“consumer complaints indicate that consumers have relied, at least in part, upon defendant’s use of plaintiff’s trademarks”).

¹²⁸ *Tiffany (NJ) Inc. v. eBay Inc.*, 600 F.3d 93, 111 (2d Cir. 2010) (internal quotation marks omitted).

¹²⁹ See Notice ¶ 36.

¹³⁰ See discussion *infra* Section X.

MVPDs, their subscribers, and potentially all U.S. taxpayers. The MVPD equipment market already depends heavily on intellectual property and includes aggressive patent-holders pursuing millions of dollars in patent infringement damages.¹³¹ Not only would the Commission's forced standardization of MVPD Information Flows risk locking in current technologies, but it also would attract numerous litigants alleging infringement of "standards-essential" patents.¹³²

While MVPDs and their equipment and software partners can currently manage patent risks when designing their systems by choosing whether to implement voluntary consensus-driven industry standards with known intellectual property rights policies or to select proprietary approaches that avoid infringement, there will be no such flexibility if those systems must be built to comply with a new mandatory government-imposed standard. Moreover, the patent liability costs associated with having to modify otherwise non-infringing systems so that the Information Flows can be used by third-party navigation devices would be borne entirely by the MVPDs because there will be no contractual relationship between MVPDs and the navigation

¹³¹ See, e.g., Letter from Neal M. Goldberg, Vice President & General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 2-3 (Nov. 30, 2015); Janko Roettgers, *TiVo Files Patent Infringement Lawsuit Against Samsung*, Variety (Sept. 8, 2015), <http://variety.com/2015/digital/news/tivo-files-patent-infringement-lawsuit-against-samsung-1201588124/> ("Basically, if a company makes a digital video recorder and has enough cash on hand, there's a good chance that TiVo has filed a lawsuit against it at some point.").

¹³² The Commission has no expertise or authority with respect to patent licensing and cannot require patent rights-holders to participate in its standards-setting process or license their patents to implementers on reasonable and non-discriminatory terms. And even if such patent holders elect to participate in the contemplated standardization process, past experience has shown that patent holders oftentimes attempt to induce organizations to develop standards covered by their patents without disclosing their interest in them. Once the standards are adopted and switching to alternative technologies is no longer practical, patent holders have the incentive to extract greater financial concessions and substantial royalty payments from implementers. Resolution of such disputes often involves years of costly litigation to determine whether a participant was obligated to disclose certain patents, or whether the license terms demanded are consistent with the party's previous commitments. See, e.g., *Qualcomm Inc. v. Broadcom Corp.*, 548 F.3d 1004 (Fed. Cir. 2008) (failure to disclose relevant patents in standards-setting process for video codec standard); *In re Negotiated Data Solutions LLC* (FTC 2008), <https://www.ftc.gov/sites/default/files/documents/cases/2008/09/080923ndscomplaint.pdf> (alleged refusal to comply with prior licensing commitment after standard incorporating entity's patented technology was established); *In re Union Oil Co. of Cal.*, 138 F.T.C. 1 (2004) (failure to disclose active prosecution of essential patents in government rulemaking process pertaining to reformulated gasoline standard); *In re Dell Computer Corp.*, 121 F.T.C. 616 (1996) (standards process participant failed to disclose patent essential to computer bus standard).

device providers that could allocate those costs where they belong – on the device providers who benefit from those modifications.¹³³

B. The Proposal Violates MVPDs’ and Programmers’ First Amendment Rights.

While the *Notice* acknowledges concerns “that the proposal constitutes compelled speech, or interference with the manner of speech of MVPDs,” the *Notice* states that it “does not believe that the proposed rules infringe MVPDs’ First Amendment rights.”¹³⁴ The *Notice*’s analysis is unpersuasive, however, and fails to address multiple ways in which its proposal would impermissibly compel or restrict the protected speech of MVPDs and content providers.

The Supreme Court has long recognized that: “[c]able programmers and cable operators engage in and transmit speech, and they are entitled to the protection of the speech and press provisions of the First Amendment.”¹³⁵ Cable operators engage in protected speech “through original programming or by exercising editorial discretion over which stations or programs to include in [their] repertoire.”¹³⁶ Accordingly, MVPDs and programmers have “the right to tailor the[ir] speech” by choosing “what to say and what to leave unsaid.”¹³⁷ This includes both the content and manner of speech, encompassing the nature of programming as well as the channels

¹³³ To the extent the Commission’s imposition of a mandatory standard is found to be a mandate to use certain patents, the Commission risks opening the floodgates of patent litigation against the United States for these same acts of patent infringement, ultimately shifting those costs to taxpayers. See 28 U.S.C. § 1498(a) (creating an “action against the United States . . . for the recovery of [] reasonable and entire compensation” for the “use or manufacture” of a patented invention “by or for the United States” with the “authorization or consent of the Government”); see also *Madey v. Duke Univ.*, 413 F. Supp. 2d 601, 607 (M.D.N.C. 2006) (“A use is ‘for the Government’ if it is ‘in furtherance and fulfillment of a stated Government policy’ which serves the Government’s interests and which is ‘for the Government’s benefit.’”) (quoting *Riles v. Amerada Hess Corp.*, 999 F. Supp. 938, 940 (S.D. Tex. 1998)).

¹³⁴ *Notice* ¶ 45.

¹³⁵ *Turner Broad. Sys., Inc. v. FCC*, 512 U.S. 622, 636 (1994).

¹³⁶ *City of L.A. v. Preferred Commc’ns, Inc.*, 476 U.S. 488, 494 (1986), *aff’d in part, vacated in part sub nom.* 13 F.3d 1327 (9th Cir. 1994).

¹³⁷ *Hurley v. Irish-Am. Gay, Lesbian & Bisexual Grp. of Boston*, 515 U.S. 557, 573 (1995) (quoting *Pac. Gas & Elec. Co. v. Pub. Utils. Comm’n of Cal.*, 475 U.S. 1, 11 (1986)).

on which it appears and the format in which it is presented. The government “may not compel affirmance of a belief with which the speaker disagrees . . . [or] expressions of value, opinion, or endorsement . . . the speaker would rather avoid.”¹³⁸

The Commission’s proposal would violate MVPDs’ and programmers’ First Amendment rights by interfering with their right to exercise control over the selection and presentation of their content and services and by compelling the altered presentation of their services.¹³⁹

Relatedly, it also would allow device manufacturers to reassemble such pieces in ways that falsely imply the endorsement of content owners and MVPDs or create a forced association with objectionable third-party content.¹⁴⁰ The proposal would also prevent MVPDs from carrying certain messages to their customers, such as through their user interfaces and guides, applications, or advertising, because it would allow third parties to remove that content and replace it with their own. In short, it would violate substantial precedent preventing both compelled speech, and restrictions on speech, by MVPDs and programmers.

The *Notice* suggests that the proposal would be subject to a more relaxed standard of constitutional review that applies to government requirements to disclose “purely factual and uncontroversial” information that is “reasonably related to the State’s interest in preventing

¹³⁸ *Hurley*, 515 U.S. at 573 (quoting *Zauderer v. Office of Disciplinary Counsel of Supreme Court of Ohio*, 471 U.S. 626, 651 (1985)) (internal citation omitted).

¹³⁹ It is surprising that the *Notice* claims the proposed rules “would not interfere in any way with the MVPD’s choice of content or require MVPDs to provide such content to anyone with whom they have not voluntarily entered into a subscription agreement.” *Notice* ¶ 45. One of the “paramount” objectives of the Commission’s proposal is that “unaffiliated vendors must be able to build competitive navigation devices, including applications, *without first obtaining approval from MVPDs*.” *Id.* ¶ 28 (emphasis added). Inevitably, MVPDs will be forced to provide content to third-party devices and apps with whom they have no voluntary business relationship and no means of ensuring consistent arrangement and presentation of content.

¹⁴⁰ For example, the Commission’s proposal would invite device manufacturers to insert their own ads or program recommendations over disaggregated content obtained from MVPDs. If such ads or recommendations were inappropriate or offensive, e.g., promotion of adult entertainment during family programming or search results displaying pirated content, viewers would likely associate that speech with their MVPDs.

deception of consumers.”¹⁴¹ However, this standard is inapplicable because the Commission’s proposal does not involve “purely factual and uncontroversial information” nor is it related to preventing consumer deception.¹⁴² The mandated Information Flows involve the forced handing over of sensitive customer information to third parties. And, more generally, the proposal interferes with MVPDs’ editorial discretion and involves compelled speech that would result in a forced association with unwanted content.

The Commission’s proposal also cannot be sustained under the more general *Central Hudson* test for government regulation of commercial speech.¹⁴³ Any interest the government may have in promoting the commercial availability of navigation devices cannot justify the severe burdens that these rules would inflict on the protected free speech rights of MVPDs and programmers, especially given the availability of far less burdensome means, such as the apps-based model, to achieve the same objective under Section 629.

C. The Proposal Is Arbitrary, Capricious, and Contrary to Law.

The Commission’s proposal fails to meet basic requirements of “reasoned decision making”¹⁴⁴ and is therefore arbitrary, capricious, and contrary to law.¹⁴⁵ Despite a long history

¹⁴¹ *Id.* ¶ 45 (quoting *Zauderer v. Office of Disciplinary Counsel*, 471 U.S. 626, 651 (1985)); cf. *Am. Meat Inst. v. U.S. Dep’t of Agric.*, 760 F.3d 18 (D.C. Cir. 2014) (recognizing that government interests in addition to correcting consumer deception may sustain mandatory disclosure of purely factual information in a commercial context).

¹⁴² As shown below, the proposal would actually *create* consumer confusion by leading MVPD subscribers to believe their MVPD has approved of, and is responsible for, the content and functionality of third-party devices.

¹⁴³ *See id.* ¶ 45 (citing *Cent. Hudson Gas & Elec. Corp. v. Pub. Serv. Comm’n of New York*, 447 U.S. 557, 566 (1980) (requiring a showing that “(1) there is a substantial government interest; (2) the regulation directly advances the substantial government interest; and (3) the proposed regulation is not more extensive than necessary to serve that interest”).

¹⁴⁴ *See Allentown Mack Sales & Serv., Inc. v. NLRB*, 522 U.S. 359, 374 (1998); *Motor Vehicle Mfrs. Ass’n of United States, Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 52 (1983).

¹⁴⁵ *See* 5 U.S.C. § 706(2)(A); *State Farm*, 463 U.S. at 43 (agencies may not “entirely fail[] to consider an important aspect of the problem, offer[] an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise”).

of unsuccessful navigation device technology mandates, the *Notice* repeats the Commission's failed experiments with CableCARD and the 1394 output rules without acknowledging serious flaws in those approaches,¹⁴⁶ realistically assessing costs and benefits,¹⁴⁷ or giving adequate consideration to less burdensome alternatives.¹⁴⁸

For one thing, the *Notice* has failed to explain why this new technology mandate is even necessary now that the apps-based alternative recognized by DSTAC is flourishing in the marketplace, has been embraced by MVPDs, OVDs, device manufacturers, and consumers alike, and already is advancing the goals of Section 629, *without* requiring a radical departure from the Commission's longstanding policy and rules interpreting the statute.¹⁴⁹ The *Notice* asserts that the DSTAC Report's recommendations "underlie and inform" the *Notice*, and it purports to advance "an approach to non-security elements that balances the interests expressed by the members of the DSTAC and commenters."¹⁵⁰ That is inaccurate. The DSTAC Report made two

¹⁴⁶ See *BellSouth Telecomms., Inc. v. FCC*, 469 F.3d 1052, 1060 (D.C. Cir. 2006) ("[T]he deference owed agencies' predictive judgments gives them no license to ignore the past when the past relates directly to the question at issue.").

¹⁴⁷ See *Michigan v. EPA*, 135 S. Ct. 2699, 2707 (2015) ("Agencies have long treated cost as a centrally relevant factor when deciding whether to regulate. Consideration of cost reflects the understanding that reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions.") (emphasis in original).

¹⁴⁸ *City of Brookings Mun. Tel. Co. v. FCC*, 822 F.2d 1153, 1169 (D.C. Cir. 1987) ("It is well settled that an agency has a duty to consider responsible alternatives to its chosen policy and to give a reasoned explanation for its rejection of such alternatives.") (quotation marks omitted); *ALLTEL Corp. v. FCC*, 838 F.2d 551, 558 (D.C. Cir. 1988) ("[T]he Commission must do more than simply ignore comments that challenge its assumptions and must come forward with some explanation that its view is based on some reasonable analysis.").

¹⁴⁹ See *Gemstar Order* ¶ 31 (finding that "neither Section 629, nor the rules adopted by the Commission to implement Section 629, require [a cable operator] to carry . . . proprietary [electronic program guide] data," and that "[t]he Commission has not found that the right to attach consumer electronics equipment to a cable system can be expanded to include the obligation by cable operators to carry any service that is used by such equipment, nor is the legislative history supportive of such a requirement"); see also *Fox Television Stations, Inc. v. FCC*, 280 F.3d 1027, 1044-45 (D.C. Cir.) ("The Commission may, of course, change its mind, but it must explain why it is reasonable to do so."), *opinion modified on reh'g*, 293 F.3d 537 (D.C. Cir. 2002); *Ramaprakash v. FAA*, 346 F.3d 1121, 1124 (D.C. Cir. 2003) ("[A]gency action is arbitrary and capricious if it departs from agency precedent without explanation.").

¹⁵⁰ *Notice* ¶¶ 9, 35.

separate non-security proposals – the regulatory model favored by the Commission, and the apps-based approach that has been widely embraced in the marketplace today.¹⁵¹ Far from “balancing” those competing proposals, the *Notice* dismisses the apps-based approach out of hand.¹⁵²

Yet the Commission’s favored approach is based on unsupported assumptions about consumer demand for this new proposal that fly in the face of past experience with failed technology mandates like the CableCARD and 1394 interface requirements.¹⁵³ Not only is there little evidence that consumers actually want the third-party devices and apps that the *Notice* seems intent on creating based on its own assertion that the market for navigation devices is not competitive, but there is also no assurance that manufacturers will even make them in the absence of genuine consumer demand. To pursue these speculative benefits in the face of marketplace evidence that apps are already increasing competition for access to MVPD content is particularly arbitrary and contrary to the evidence before the Commission.

The *Notice* also disregards some of the few “major points of agreement” in the DSTAC Report, which concluded that “[i]t is not reasonable to expect that all MVPDs will re-architect their networks in order to converge on a common solution,” and that it “is unreasonable to expect

¹⁵¹ See DSTAC Report at 4-6. Notably, the DSTAC could not agree on whether recommendations for *any* non-security elements were within the scope of its charge under the STELAR Act of 2014, underscoring the lack of consensus behind the Commission’s proposal. See *id.* at 1.

¹⁵² While the *Notice* seeks comment generally “on the DSTAC’s Proprietary Applications approach and whether the Proprietary Applications approach could satisfy Section 629,” it expresses the Commission’s “doubts that such an approach could assure a commercial market for navigation devices” and strongly suggests that the Commission considers it a non-starter. See *Notice* ¶ 47. Although the *Notice* speculates about consumers’ interest in purchasing third-party navigation devices and MVPDs’ economic incentives to “maintain[] control over the user interface,” *id.* ¶¶ 15-18, the Commission chose not to proceed with AllVid six years ago despite its proponents making similar claims, see *AllVid NOI* ¶¶ 39-41 (seeking comment on “navigation device economics” and various situations where MVPDs might receive a benefit from control over navigation devices).

¹⁵³ See discussion *infra* Section X.C.

that MVPDs will modify their access networks to converge on a single common security solution.”¹⁵⁴ Contrary to these consensus recommendations, the Commission’s proposal would require extensive and costly changes in MVPD networks and infrastructure to provide the required Information Flows to third-party devices and apps that consumers may not want and manufacturers may not want to develop.¹⁵⁵ The proposal leaves unresolved many legal issues and factual flaws of the Commission’s own creation, and does not even square with the recommendations in the DSTAC Report.¹⁵⁶ Beyond a conclusory and insupportable statement that this approach “is the least burdensome way to assure commercial availability of navigation devices,”¹⁵⁷ the *Notice* fails to acknowledge – much less balance – the substantial costs of its proposal in comparison to the far less burdensome apps-based model. These costs will be massive and virtually certain to occur, in contrast to the supposed benefits of the Commission’s proposal, which are entirely speculative.

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In sum, the various rationales and legal theories the *Notice* advances to support the Set-Top Box Mandate collapse on closer scrutiny. The proposal is well beyond the Commission’s authority and violates other provisions of the Communications Act. It also violates intellectual

¹⁵⁴ DSTAC Report at 2-3.

¹⁵⁵ See discussion *infra* Section VI.

¹⁵⁶ The *Notice* acknowledges the DSTAC’s findings that technical innovations have produced an “increasing number of devices on which consumers are viewing video content, including laptops, tablets, phones, and other ‘smart,’ Internet-connected devices,” and that “software-based applications have made it easier for content providers to tailor their services to run on different hardware.” *Notice* ¶ 9 (citing DSTAC Report at 38-39, 262-65). It also recognizes that “[t]here is evidence that increasingly consumers are able to access video service through proprietary MVPD applications,” as well as through set-top boxes. *Id.* ¶ 13. Yet despite those observations, the Commission asserts that “proprietary apps . . . do not offer consumers viable substitutes to a full-featured, leased set-top box.” *Id.* ¶ 16. The Commission further suggests that despite the “popularity of streaming devices such as Amazon Fire TV, Apple TV, Chromecast, Roku, assorted video game systems, and mobile devices that can access over-the-top services such as Netflix, Amazon Instant Streaming, and Hulu,” those options are irrelevant because such devices are “rarely used as the sole means of accessing MVPDs’ programming.” *Id.* ¶ 14.

¹⁵⁷ *Id.* ¶ 35.

property protections, the First Amendment, and is arbitrary and capricious. Moreover, as discussed in the sections that follow, even assuming the Commission could overcome the substantial and fatal legal infirmities addressed above, its Set-Top Box Mandate proposal should still be rejected because it would cause a raft of consumer and other harms and do significant damage to today's vibrant video marketplace.

VI. THE COMMISSION'S SET-TOP BOX MANDATE WOULD IMPOSE SUBSTANTIAL COSTS AND HARMS ON MVPDS AND CONSUMERS.

Among the many flaws of the *Notice* is the erroneous belief that the Set-Top Box Mandate is simple to implement and can be achieved essentially with a flick of a switch, without the need for changes to MVPD networks or the deployment of new operator-supplied in-home equipment to enable delivery of MVPD content to retail devices. According to the *Notice*, this is simply a matter of MVPDs delivering the entirety of their licensed programming services to “red boxes” (i.e., MVPD-supplied devices and apps) and “blue boxes” (i.e., third-party devices and apps).¹⁵⁸ But these claims are wholly unsupported by the record and cannot be squared with the specifics of the *Notice*'s proposal, what little there are.

As Comcast's Chief Technology Officer, Tony Werner, explains in his attached declaration, the Commission's Set-Top Box Mandate would in truth force MVPDs to make substantial and costly network changes and would require the deployment of additional in-home equipment – i.e., a second, mandatory leased box.¹⁵⁹

¹⁵⁸ See *Notice* ¶¶ 11, 46.

¹⁵⁹ See Werner Decl. ¶¶ 9-17.

A. The Set-Top Box Mandate Would Require MVPDs to Make Significant Changes To Their Networks.

The Commission's Set-Top Box Mandate would require that MVPDs make their linear and VOD programming available to third-party devices and apps using three Information Flows that conform to specifications set by unnamed open standards bodies.¹⁶⁰ The *Notice* identifies the three Information Flows that would be standardized: (1) Service Discovery Data (i.e., information about what programming is available to the consumer); (2) Entitlement Data (i.e., information about what customers may do with the programming); and (3) Content Delivery Data (i.e., the video programming itself and information necessary to make the programming accessible to persons with disabilities).¹⁶¹

The *Notice* acknowledges that MVPDs do not deliver video today using the three standardized Information Flows,¹⁶² but nonetheless suggests that developing and implementing

¹⁶⁰ *Notice* ¶ 26 (explaining that the “Navigable Services” that MVPDs would make available to third-party devices and apps would include linear programming, VOD, and EAS messages). The *Notice* also asks whether cloud DVR should be included in the definition of “Navigable Services,” which would be made available to third parties. *Id.* However, this is not technically feasible under the Commission’s proposal, as cloud DVR service is not delivered through a standard interface and cannot be delivered to third parties using the Commission’s proposed Information flows.

¹⁶¹ *Id.* ¶¶ 35-40. The Commission further delineates the specific pieces of data that would be included in each Information Flow. Specifically, Service Discovery Data must include, at a minimum, “channel information (if any), program title, rating/parental control information, program start and stop times (or program length, for on-demand programming), and an ‘Entertainment Identifier Register ID,’” while Entitlement Data must include “(1) copy control information and (2) whether the content may be passed through outputs, and if so, any information pertaining to passing through outputs such as further content protection and resolution, (3) information about rights to stream the content out-of-home, (4) the resolutions that are available on various devices, and (5) recording expiration date information, if any.” *Id.* ¶¶ 38-39.

¹⁶² *See id.* ¶¶ 35-37. As fully explained in the DSTAC Report, far from a standardized approach, MVPDs employ various distribution methods and technologies that are often unique to their specific platforms and their specific networks. Indeed, the DSTAC Report spent considerable time detailing these “fundamental differences” among MVPD distribution architectures, particularly variations in VOD delivery, and conditional access systems and other technologies. *See, e.g.,* DSTAC Report at 30 (“Cable system architectures reflect fundamental differences dating from different design goals, different vendors, and different owners.”); *id.* at 31 (“The Direct Broadcast Satellite (DBS) architectures of DirecTV and DISH Network contrast through fundamental differences.”). In particular, for the cable industry, the DSTAC Report noted that “there are fundamental differences in technologies for [conditional access systems], controllers, the out-of-band (OOB) communications channels used for command and control of the set-top box, network transports, QAM modulation, video codecs, core ciphers, advanced system information such as network configuration, session management, operating system, processor instruction set, [and]

the standardized Information Flows will not be difficult or time-consuming given the migration of MVPD networks to IP, the coalescence of the industry around MPEG and other specifications and standards for delivery of video, and the availability of DLNA-related work around VidiPath.¹⁶³ There is absolutely no evidence in the record to support the fanciful assumptions by the Commission as to these complex technical issues.

And, in fact, there are several significant flaws in the *Notice*'s logic. While Comcast and some other cable operators are beginning to migrate to IP delivery, a large swath of the cable industry continues to rely on QAM delivery of video, and DBS providers do not use IP for satellite delivery of their service.¹⁶⁴ Likewise, as explained below, VidiPath is a standards-based solution that relies on an HTML5-based MVPD app for delivery of service on client devices, and was not designed for the disaggregation of MVPD service.¹⁶⁵

In any event, at a minimum, the *Notice* vastly understates the level of work, and associated costs, that would be necessary to implement its Set-Top Box Mandate. Comcast which, even in its early stages, is far ahead of other MVPDs in the IP transition, would nevertheless need to re-architect its network in order to deliver video in the three Information Flows contemplated by the proposal. It is difficult to know exactly what Comcast would be required to do to implement the proposal since the Commission's proposal is merely theoretical and the relevant standards have not yet been developed, but the level of work would likely be substantial, complex, and costly.¹⁶⁶

interactive services Unlike the telephone network that was originally built to a common nationwide standard, the cable industry is a roll up of these many technologies." *Id.* at 30.

¹⁶³ *Notice* ¶¶ 4, 43.

¹⁶⁴ *See* DSTAC Report at 30-32.

¹⁶⁵ Werner Decl. ¶ 20.

¹⁶⁶ *Id.* ¶¶ 7-8.

“Entitlement Data” provides a good example of the type of costly changes Comcast and other MVPDs would have to make. Under the proposal, Comcast would now have to deliver that data using open standards. Comcast’s and many other MVPDs’ current networks would not be able to support these new standards, so they would have to make significant changes to their entitlement servers and other parts of the network in order to implement the standards.¹⁶⁷ Furthermore, Comcast and other MVPDs would have to ensure that the entitlements (which contain sensitive personal information about what content individual customers can receive) are delivered in a way that does not violate MVPDs’ privacy obligations to consumers.¹⁶⁸ As discussed below, it is unclear how that can be achieved under the Commission’s proposal.¹⁶⁹

In addition, Comcast would have to dedicate more bandwidth to delivering the Information Flows to third-party devices and apps. Comcast, like other cable operators, delivers IP cable service to its apps today as an integrated, unified service on a cloud-to-ground, unicast basis. In contrast to the traditional cable distribution method, where all linear channels are broadcast over the network to customers’ homes, in a unicast model content is sent on a one-to-one basis to a customer requesting that specific piece of content. Comcast has longer term plans to migrate to a multicast delivery model, where IP streams can be sent to multiple users of particular content at the same time, which will result in more efficient use of network resources. However, under the two-year timeframe contemplated in the Commission’s proposal, Comcast would have to deliver the mandated Information Flows to third-party devices and apps on a unicast basis, and, as detailed further below, third parties lack the tools Comcast has to integrate

¹⁶⁷ Given the differences across MVPD networks and delivery technologies, such necessary entitlement server changes would likely not be unique to Comcast.

¹⁶⁸ Werner Decl. ¶ 9.

¹⁶⁹ Today in the CableCARD context, entitlement information is handled by the CableCARD itself not the third-party devices. *See* discussion *infra* Section IX.A.

into its own apps to manage those bandwidth impacts. The number of potential devices and apps that will be accessing MVPD service is unknowable at this point, but is potentially quite large, and it is uncertain whether Comcast or other MVPDs will have the capability to accommodate all of the unicast streams (and associated entitlements and metadata).¹⁷⁰ Regardless, as discussed further below, the bandwidth that will have to be dedicated to serving these devices and apps will mean less bandwidth for other services and innovations – including broadband, contrary to the Commission’s goals – and will complicate Comcast’s ongoing IP transition plans.¹⁷¹

B. The Set-Top Box Mandate Would Require MVPDs To Deploy New In-home Equipment To Deliver Content to Third-Party Retail Devices and Apps.

Aside from the network impacts discussed in the prior section, MVPDs would have to deploy new in-home equipment – at additional cost to the consumer – to comply with the Set-Top Box Mandate. The *Notice* – without any record support – says that no such equipment will be required,¹⁷² but that is plainly wrong. The *Notice* recognizes that DBS providers will have to use in-home equipment,¹⁷³ and the same will be true for cable operators. Cable systems today operate on a two-way, interactive basis, under which operator-supplied devices and apps are constantly communicating with the network and play a critical role in managing the delivery of cable service to the home. So, for example, Comcast’s set-top boxes and Xfinity TV apps (like other MVPD apps) include software code that manages requests for programming and

¹⁷⁰ See Mark Barrington, *Why the FCC Won’t Unlock the Box*, Medium (Feb. 22, 2016), <https://medium.com/@markbarrington/why-the-fcc-won-t-unlock-the-box-2ff0029cb251#.8fb0itw6d> (noting that “the FCC assumes that because a pay TV operator can deliver some video services over IP to a third party device that all services can be delivered this way to all customers,” but pointing out that “[t]he national infrastructure needed to support more than 200m simultaneous real-time encoded streams does not exist. The bandwidth to support those streams over unicast does not exist.”).

¹⁷¹ See Werner Decl. ¶¶ 9-12.

¹⁷² *Notice* ¶ 46.

¹⁷³ See *id.* ¶ 65.

communications between the box/app and where the programming is cached on the network to ensure the programming is delivered, and done so efficiently.¹⁷⁴ In addition, this software code minimizes the risks of degradation to the service due to bandwidth shortages and congestion, and also enables Comcast to support rapidly evolving entertainment technologies, such as accessibility features and advanced video technologies.¹⁷⁵

Stripping away MVPD apps and the associated apps-based code raises substantial questions about how these types of communications functions would be performed under the Commission's proposal. MVPD networks do not provide a standardized way for third-party devices or apps to communicate with the network and cache servers, so it is unclear how the Commission envisions these functions occurring across networks with different infrastructures.¹⁷⁶ Moreover, even if this threshold issue could be overcome, it is uncertain how such communications could occur without overwhelming MVPD networks. Third-party devices and apps do not have the incentive to make network requests for entitlements, metadata, and video streams on an efficient basis, so without some way to mediate those requests, these requests could overwhelm Comcast's network, resulting in service disruptions and network outages. Also, currently only authorized and tested code is allowed to access the Comcast video network. CableCARD retail devices, for example, make no calls into the cable network – only the tested and certified CableCARD itself can access the video network directly. Considerable time and expense would be required to harden the network since third-party device software can

¹⁷⁴ In the CableCARD context, the operator-supplied CableCARD includes the code necessary for receiving entitlements and other communications from the MVPD network.

¹⁷⁵ See Werner Decl. ¶ 13.

¹⁷⁶ As the DSTAC Report underscored, there are significant technical differences between and among MVPD systems. See DSTAC Report at 30-32.

be updated at any time, introducing intentional or inadvertent security threats not possible in today's video networks.¹⁷⁷

Given all these issues, the only practical alternative for Comcast and other MVPDs to avoid these network harms, beyond the app model widely embraced in the marketplace, would be to deploy a new in-home gateway device – at additional cost to the consumer – that can manage the interaction of third-party devices and apps with the networks and protect the network from security breaches. Even Public Knowledge, a leading proponent of the Set-Top Box Mandate, has recognized the need for an in-home device.¹⁷⁸ This gateway would mediate requests for entitlements, metadata, and video under the Commission's Set-Top Box Mandate and communicate with MVPD cache servers in order to ensure that the programming is delivered, and done so efficiently while minimizing the risks to the network (e.g., requests for entitlements would be sent to the gateway, and the gateway would then communicate with the network and manage the actual delivery of the content, something the app itself normally would do).¹⁷⁹

Operators would also need such an in-home device in order to avoid locking in certain technologies in the network. Under the Commission's proposal, operators would have to use specific technology formats for delivering the standardized information flows to third-party

¹⁷⁷ See Werner Decl. ¶ 14.

¹⁷⁸ See Jared Newman, *The FCC Wants to Blow Up the Cable Box. Here's What Its Proposal Will (and Won't Do)*, TechHive (Feb. 25, 2016), <http://www.techhive.com/article/3036829/streaming-hardware/the-fcc-wants-to-blow-up-the-cable-box-heres-what-its-proposal-will-and-wont-do.html> (“At the moment, this hardware solution – known in the FCC's proposal as a ‘virtual headend’ – isn't set in stone, but chances are you won't be completely free of rental fees. ‘You're probably in the short term going to need something in the house,’ said John Bergmayer, a senior staff attorney at consumer advocacy group Public Knowledge. ‘It's just sort of an open question of exactly what that device would be.’”).

¹⁷⁹ A gateway device would be needed whether Comcast is delivering video on a unicast or, as described above, following a migration to multicast delivery.

devices and apps.¹⁸⁰ Without an in-home device, those technology formats would be frozen in the network, making it difficult (if not impossible) to accommodate network changes over time. An in-home device would mitigate that risk – the operator could continue to innovate in the network, and use the in-home device to convert the Information Flows to the required formats before sending the flows onto third-party devices and apps.¹⁸¹

Such a gateway device does not exist today, so Comcast and other MVPDs would have to incur costs for developing a new device that could implement the standardized Information Flows contemplated under the Commission’s proposal.¹⁸² Moreover, requiring customers to lease or buy such a device would be directly contrary to the Commission’s goal of reducing reliance on leased devices and transitioning to “boxless” offerings, and would only increase consumer costs.¹⁸³ It would also have the effect of significantly increasing consumer energy consumption and energy costs for consumers, undermining the progress the industry has made in this area.¹⁸⁴ It bears emphasis that the existing apps-based model already achieves this goal and can be supported *without* the need for new equipment or additional network capacity.

¹⁸⁰ See Notice ¶ 35.

¹⁸¹ See Werner Decl. ¶¶ 14-17.

¹⁸² In addition, as noted below, developing new devices takes substantial time, and this work cannot begin until after a standard is developed. See discussion *infra* note 291.

¹⁸³ See Notice ¶¶ 13, 65.

¹⁸⁴ Additional equipment could mean \$1.6 billion in increased residential electric costs and nine million metric tons of additional greenhouse gas emissions each year. See Comcast Comments, MB Docket No. 15-64, at 18 (Oct. 8, 2015). This would cancel out the gains made under the voluntary set-top box energy conservation agreement, which has saved consumers more than \$500 million in energy bills and avoided three million metric tons of carbon dioxide emissions in the last two years alone. See Press Release, NCTA, Independent Audit Finds Consumers Have Saved More Than \$500 Million from Energy Efficient Set-Top Boxes (Aug. 6, 2015), <https://www.ncta.com/news-and-events/media-room/content/independent-audit-finds-consumers-have-saved-more-500-million-energy-efficient-set-top-boxes>. The Set-Top Box Mandate would also have the backwards-looking effect of encouraging the use of in-home DVRs, rather than more energy-efficient cloud DVR approach.

C. The Set-Top Box Mandate Would Cripple Innovation and the Rollout of New Services.

The *Notice* contends that its proposal will promote and support innovation for MVPDs and third-party device manufacturers and app developers alike.¹⁸⁵ But, in truth, the proposal would have precisely the opposite effect, and would wind up slowing the deployment of innovative new services and add significant costs to any plans that an MVPD might have to migrate to an all-IP network. The costs to implement the Commission's proposal – to make the requisite network changes and to design, build, and maintain new in-home devices – would undoubtedly be substantial. Such costs would divert resources away from innovation and investment, and ultimately would be borne by consumers. Moreover, MVPDs would be compelled to make these expenditures without any certainty that device makers or app developers would build to the new Commission-imposed standards or that consumers would have any interest in such devices and apps even if they were deployed – in other words, a potential repeat of the CableCARD and IEEE 1394 experiences discussed further below.¹⁸⁶

In addition, as explained above, Comcast would have to dedicate significantly more bandwidth to deliver IP cable service to third-party devices and apps, thus complicating Comcast's IP transition plans, which are still in their early stages, and requiring Comcast to divert bandwidth from other services desired by consumers and prioritized by the Commission such as broadband.¹⁸⁷ For MVPDs that are not as far along as Comcast in their IP transitions or have not even started their transitions, the Set-Top Box Mandate may discourage investment in

¹⁸⁵ See *Notice* ¶¶ 1, 34, 37.

¹⁸⁶ See discussion *infra* Section X.

¹⁸⁷ Comcast's goal is to proceed with its transition to all-IP cable service on an incremental basis to limit impacts on customers of legacy QAM-based cable service, but those plans will be disrupted if Comcast has to allocate more bandwidth to comply with the Commission's proposal in a two-year timeframe.

those transitions given the costs associated with complying with the new mandate. So while the *Notice* contends that its proposal would make it easier for MVPDs to deploy cloud-based services,¹⁸⁸ the proposal would actually make it far more difficult and expensive for MVPDs to do so.¹⁸⁹

Most importantly, the *Notice*'s "parity" requirements would erect significant barriers to innovation by subjecting changes in MVPD service to standards-setting and regulatory delays, and could essentially freeze technologies by preventing MVPDs from launching new "Navigable Services" – such as new content or existing content in a new resolution or format – on their own apps and devices unless and until MVPDs have also ensured that third parties can receive these same products and services.¹⁹⁰ Meanwhile Netflix, Amazon, and all other video app developers would be free to automatically update their apps through seamless software updates or through a new version to be downloaded in order to make innovative services available to their customers.¹⁹¹

¹⁸⁸ See *id.* ¶ 46.

¹⁸⁹ One analyst observed that the marketplace is already addressing device competition through the IP transition (i.e., "a market-driven evolution"), but "this transition requires considerable capital investment and operators have disclosed strategies that allow for a gradual transition." See Letter from Frank Louthan et al., Raymond James, to FCC Chairman Tom Wheeler and Commissioners, MB Docket No. 16-42, attached report at 5 (Apr. 11, 2016). However the Commission's Set-Top Box Mandate will disrupt these plans and "risk[] stifling innovation and bringing unintended consequences" *Id.*

¹⁹⁰ See *Notice* ¶¶ 63-69. For example, MVPDs would be prevented from offering new content or existing content in a new resolution or format on its own apps unless third parties could receive the same format as well.

¹⁹¹ Werner Decl. ¶¶ 18-19. The *Notice* states that it is not adopting "common reliance" in its proposal. See *Notice* ¶ 69. Requiring MVPDs to deploy new services in lockstep with third-party devices and apps, however, would be akin to the effects of the innovation-chilling CableCARD mandates, which required cable operators (and cable operators alone) to factor CableCARD into their plans for new offerings. Common reliance in the CableCARD context imposed over a \$1 billion in costs on cable operators and slowed cable innovation, such as the transition to all-digital service. The Commission's new proposal will have similar harmful effects. See NCTA Comments, MB Docket No. 15-64, at 10-11 (Oct. 8, 2015) ("NCTA Comments") ("'Common reliance' is the idea that operator-supplied equipment must use the same security solution as retail devices to receive MVPD service, and was the concept behind the integration ban (requiring CableCARDs in operator-provided boxes) that cost consumers more than a billion dollars, wasted energy, and delayed innovation before it was finally repealed by Congress as an unnecessary failure."); see also Free State Foundation Comments, MB Docket No. 15-64, at 6-7 (Oct. 8, 2015).

Relatedly, it is common in dynamic marketplaces for standards to become outdated. Indeed, parties have warned that by the time standards are adopted for the Commission's proposal, they will instantly become obsolete given the rapid pace of change in the video ecosystem.¹⁹² Consequently, to the extent that the Commission-mandated standards can no longer support new, next-generation services and features, MVPDs would need to seek revisions of the standards before they could even implement these new services and features for their devices or apps or third-party devices/apps.¹⁹³ This requirement could also have the effect of "freezing" MVPD networks until a new standard could be developed to work with the latest network technologies – in contravention of Congress's explicit instruction that the Commission "avoid actions which could have the effect of freezing or chilling the development of new technologies and services."

The apps-based model, in contrast, provides a framework for rapid innovation. Apps can be updated to deliver new services with a simple code download, and without the need for Commission or standards-body approvals.

D. The Set-Top Box Mandate Would Create Substantial Customer Confusion.

The Commission's Set-Top Box Mandate would also create significant customer service issues and lead to customer confusion and frustration, as well as unnecessary costs. Today, when Comcast customers receive their Xfinity TV service through an Xfinity app or Comcast-supplied device, customers know that they can contact Comcast to troubleshoot any issues or take

¹⁹² See, e.g., NCTA Comments at 11, 37; *see also Notice*, 31 FCC Rcd. at 1605 ("So while MVPDs, the consumer electronics industry, and content creators spend years trying to implement the Commission's rules, technology could render all of the work obsolete by the time it's ready to roll out.") (statement of Commissioner Pai).

¹⁹³ Such a process would undoubtedly take substantial time and could be subject to "hold-up" from parties who may resist changes for their own purposes, further slowing innovation. Moreover, in order to propose a change in the standards, MVPDs would have to disclose confidential business strategies and offerings, to the benefit of competitors not subject to the same restrictions.

advantage of one of Comcast's many customer service resources to help resolve issues. But, under the Commission's proposal, customers would have no idea who to contact or who is responsible if there is a problem accessing video programming through a third-party device or app. Customers would not be able to tell whether the problem is with their MVPD service or with the device or app. To the extent customers contact their MVPD by default, MVPDs may not be able to resolve any implementation issues that are within the third-party's control and will have no choice but to direct the customer to the third-party device manufacturer or app developer. And this assumes that third parties even have adequate customer service resources in place in order to assist customers. Tech companies like Google do not have local service offices – and some device makers or app developers may have no customer service operations at all.

In addition, Comcast has invested in creating “self-healing” networks in which the Comcast networking code in Xfinity apps and Comcast-supplied devices can detect network issues and report problems so that Comcast can remedy certain issues before customers may even be aware of any problem, thus improving customer service and minimizing the need to contact Comcast altogether. Third-party devices and apps that lack Comcast's networking code would have no such capabilities. This limitation, along with troubleshooting problems that may arise with third-party devices and apps, would likely generate substantially more customer service phone traffic, require additional resources for customer service support, and cause further customer confusion and frustration.

Customers would also be confused by the fact that third-party devices and apps will not deliver many of the same services and features customers have come to expect. The Set-Top Box Mandate would require MVPDs to provide “Navigable Services” to third parties, which by

definition would be limited to MVPD's linear and VOD programming and EAS messages.¹⁹⁴ Consequently, third parties would be given unlimited discretion to repackage these Navigable Services into their own derivative services (and potentially even charge extra to access these services), without any obligation to incorporate all the basic elements of their MVPD service – all the linear channels and VOD (free and those that are available for purchase, since the third party may prefer to only offer consumers that content for which the third party gets paid).

As Dr. Besen explains, “Although MVPDs have incentives to permit their subscribers to access their programming on third-party devices that *increase* the value of their services by improving the viewer experience, they, together with programmers, are not indifferent to actions taken by third parties that *reduce* the value of that experience.”¹⁹⁵ Thomas Riedl, the head of Google's Android TV, acknowledged the importance to service providers of ensuring the delivery of such distinctive, customer-friendly features: “[W]hat's crucial [for service providers and content owners] is they want to deliver the best user experience and make sure that the content they provide to the user is displayed exactly as they broadcast it.”¹⁹⁶

Comcast, for example, invested hundreds of millions of dollars to develop its next-generation X1 platform that integrates numerous features that revolutionize customers' viewing experiences. The X1 has been immensely popular with customers.¹⁹⁷ But the Commission's new mandate would allow third parties to strip out these innovative features and relegate

¹⁹⁴ Notice ¶ 38.

¹⁹⁵ Besen Decl. ¶ 27.

¹⁹⁶ DSTAC Report at 276 (quoting Thomas Campbell, *Google: “Google TV Has Evolved into Android TV,”* IP&TV News (Apr. 21, 2015), <http://www.iptv-news.com/2015/04/google-google-tv-has-evolved-into-android-tv/>).

¹⁹⁷ In fact, churn among X1 customers has gone down approximately 30%. Macquarie Research, *BYOB: Not a Big Deal*, at 2 (Jan. 29, 2016). Dr. Besen observes that, for this same reason, “churn is likely to *increase* if the viewer experience is degraded as a result of actions taken by third parties.” Besen Decl. ¶ 28.

Comcast and other MVPDs to being suppliers of raw programming, thereby undermining their ability to compete in the marketplace.¹⁹⁸ Meanwhile, online video distributors like Netflix and Amazon would face no similar limitations.

The apps-based model creates none of these consumer harms. MVPDs can deliver their service via their apps, and if there is a problem with the app, consumers can contact the MVPD to resolve the matter. And if the problem involves the underlying device platform, the MVPD will have a business relationship with the platform provider and can work collaboratively with the provider to address the issue.

VII. THE SET-TOP BOX MANDATE WOULD ENDANGER THE ENTIRE CONTENT PRODUCTION ECOSYSTEM.

As shown above, consumers today have immense choice when it comes to high-quality video programming over a wide variety of MVPD and other distribution platforms. Licensing agreements between programmers and distributors, which detail such key terms as content protection (e.g., content security, geographic restrictions, restrictions on redistribution); content integrity (e.g., preserving the intended presentation of content, restrictions on inserting advertising in and around content); and content promotion (e.g., advertising, channel placement, content recommendations, objective search result ordering), are critical to this thriving marketplace. These privately negotiated agreements give programmers the assurances they need to negotiate with advertisers and to secure funding to obtain, produce, and distribute content.

¹⁹⁸ Although there is some suggestion in the *Notice* that any new standard could allow for delivery of the full MVPD services, even if technically feasible, third parties would be under no obligation to do so. *See Notice* ¶ 44.

The Commission's Set-Top Box Mandate puts this thriving ecosystem at risk.¹⁹⁹ The Chairman has said that the proposal will “honor[] the sanctity” of these agreements,²⁰⁰ but the details of the Commission's proposal indicate otherwise. The proposal effectively creates a zero-rate compulsory copyright license for third parties to retransmit programmers' content; does not address critical licensing terms around advertising and channel placement; and provides no legal or technical means for enforcing entitlement restrictions around the copying and outputting of content. In short, as numerous programmers – including those representing diverse and independent programmers – have explained, the proposal threatens the economic model that supports today's robust and dynamic video programming ecosystem.²⁰¹ There is no fix for these issues, making the proposal entirely unworkable.

A. The Set-Top Box Mandate Would Allow Third Parties To Free Ride on MVPD and Programmer Agreements.

A key predicate for the Commission's proposal is that third-party device makers and app developers are unable to present multichannel video programming absent government intervention.²⁰² That is simply not the case. As various commenters pointed out in the DSTAC proceeding, programmers are licensing their content to a wide variety of entities, including device makers and app developers. So, for example, Sony has launched its PlayStation Vue

¹⁹⁹ See Rep. Henry Waxman, *FCC Cable Box Proposal Affects More Than Just Cable Boxes*, The Hill, Congress Blog (Mar. 21, 2016), <http://thehill.com/blogs/congress-blog/technology/273590-fcc-cable-box-proposal-affects-more-than-just-cable-boxes> (warning that the Commission's proposal “would apply the reverse-Midas touch to this golden age of television, because it would disrupt the delicately balanced competitive forces that are behind the explosion of creativity we've benefited from in recent years”).

²⁰⁰ Fact Sheet, FCC Chairman Proposal To Unlock The Set-Top Box: Creating Choice & Innovation, at 2 (Jan. 27, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-337449A1.pdf; see also Notice, 31 FCC Rcd. at 1601 (statement of Chairman Tom Wheeler) (“This proposal will *not* interfere with the business relationships or content agreements between MVPDs and their content providers or between MVPDs and their customers.”) (emphasis in original).

²⁰¹ See Besen Decl. ¶¶ 4, 16, 19.

²⁰² See Notice ¶¶ 12, 25-35.

service, which includes a mix of linear and VOD content. Likewise, Apple, Amazon, and Google – all of which sell devices (as well as many others like Netflix and Hulu) – license content directly from content creators for their online video services.

NBCUniversal is a prime example of one such programmer making its content available to a variety of entities and on a number of devices and platforms. Notably, NBCUniversal licenses content to OVDs, including among others:

- | | | | |
|---------------|------------------|-------------------|------------|
| • Amazon | • Fullscreen | • MSN | • Sony |
| • AOL | • Google/YouTube | • Netflix | • Spotify |
| • Apple | • Hoopla | • Prima Cinema | • Vessel |
| • Crackle | • Hulu | • Redbox | • Vudu |
| • Dailymotion | • Kaleidoscope | • Reliance | • Whipclip |
| • Flixster | • Microsoft | Majestic Holdings | • Yahoo |

NBCUniversal also makes its apps available on computers, mobile devices (Apple iOS, Android, Windows, and Kindle Fire), streaming devices (Roku, Apple TV, and Fire TV), and Xbox One gaming console.²⁰³ In short, the ecosystem *is* providing substantial opportunities for non-MVPDs to obtain the same content (and more) that is licensed to MVPDs, while protecting the security and integrity of that content.

The Commission’s proposal would completely upend this competitive, dynamic marketplace. It would, in effect, give third-party device makers and app developers a royalty-free compulsory copyright license to obtain and monetize MVPD content,²⁰⁴ “undermin[ing] the copyright framework under which content providers agree to make their content available.”²⁰⁵ Under the proposal, MVPDs would have to disaggregate their services so that these third parties

²⁰³ In addition, Comcast authenticates more than 90 programming networks across 18 device platforms.

²⁰⁴ See discussion *supra* Section V.A.1.

²⁰⁵ Letter from The Walt Disney Co. & ESPN, Inc., et al., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 1-2 (Jan. 14, 2016) (“Content Companies Ex Parte”).

could reassemble and rebrand the content as their own using their own interfaces, without any compensation to programmers or content owners. Moreover, these third parties would have the ability to monetize this content for their own business models.

The proposal would reduce – if not eliminate – incentives for third parties to enter into content agreements, to create original content, or to deploy their own facilities-based services. Instead, they would just piggyback off existing MVPD content and services, depriving content creators of additional licensing opportunities. So, for example, a device maker or app developer could combine MVPD content with other content sources (including potentially pirated content sources), and sell that combined service to consumers. Programmers would lose control over the distribution and monetization of their services, and have no ability to enforce terms they have negotiated with MVPDs over advertising, channel placement, and other matters.²⁰⁶ As one commenter put it, the proposal “amounts to government-sponsored piracy in allowing TiVo and Google to broadcast programs that providers pay to distribute.”²⁰⁷

The upshot of this government-imposed regime is that programming rights would be devalued, thereby putting at risk the entire content production ecosystem.²⁰⁸ If a third party like Google or Amazon can obtain and monetize programming in this way for free, that would dry up funding to invest in high-quality content. At the same time, creators of content will only be able to monetize that content one time solely from MVPDs before it is “out of the box.”²⁰⁹

²⁰⁶ If key licensing terms like content security are undermined, programmers will be discouraged from licensing their content to MVPDs, and MVPDs will be highly disadvantaged vis-à-vis OVDs in the acquisition of content distribution rights, ultimately to the detriment of consumers.

²⁰⁷ Wall St. J. Editorial Bd., *Government by Google*, Wall St. J. (Mar. 20, 2016), <http://www.wsj.com/articles/government-by-google-1458508016>.

²⁰⁸ See Besen Decl. ¶¶ 4, 16, 19.

²⁰⁹ And, as noted above, MVPDs would have incentive to pay less, not more, for the programming.

B. The Set-Top Box Mandate Would Allow Third Parties To Ignore Key Licensing Terms.

The Commission has claimed that its Set-Top Box Mandate will respect the sanctity of contracts between MVPDs and programmers, but details from the proposal tell a different tale. In fact, the mandate would allow third-party device makers and app developers to disregard contracts and ignore key licensing terms between MVPDs and programmers – while MVPDs would still be bound by these terms. Neither the MVPD nor the programmer would have a direct contractual relationship with the device maker or app developer under the Commission’s proposal, so there would be no direct method for enforcing any of the key content protection, content integrity, and content promotion terms in programming agreements. These detailed provisions are crucial to programmers’ ability to recoup their investments in content and factor into the economics of their agreements with MVPDs, particularly in an era when consumers increasingly engage in time-shifted viewing.²¹⁰

For example, programming contracts typically contain detailed provisions governing channel placement and ad-related restrictions. Numerous parties, especially programmers, have expressed concerns that third-party devices and apps would have the ability to modify, for example, the channel lineup or channel placement (or drop channels entirely), or replace or alter advertising under the Commission’s proposal.²¹¹ For example:

- Alfred Liggins, CEO of TV One: “Television programmers depend on the integrity of licensing and distribution deals to produce their shows. These arrangements – including critical terms such as channel placement, advertising, scheduling, and more – are the lifeblood of the video marketplace today. But a government mandate that enables AllVid special interests to pick and choose which of these terms to follow

²¹⁰ See Besen Decl. ¶¶ 4, 16, 19.

²¹¹ See, e.g., Letter from Susan L. Fox, The Walt Disney Company, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 1 (Feb. 12, 2016) (urging that “any third-party providing devices or software to consumers be required to honor the sanctity of their programming agreements with MVPDs - including important matters such as channel placement and advertising-related restrictions”).

would do severe damage to the programming ecosystem, and in particular, niche and minority-focused networks.”²¹²

- HOLA! TV: “The proposal would allow some large Internet companies to unilaterally take our content without our approval, or compensation, disassociate it from existing negotiated channel placements, and enable those entities to sell intrusive advertising absent a mechanism to share any revenue with programmers.”²¹³
- Joint Content Companies: The Commission’s proposal “would permit the abrogation by third parties of uniquely and carefully interrelated elements of licensing agreements (including channel position, channel line-ups, . . . branding, and disaggregation of content from metadata).”²¹⁴
- Fuse Media: “[D]isaggregating programming packages and removing key content elements threatens programmers’ revenues.”²¹⁵

Contrary to the Chairman’s claims, nothing in the Set-Top Box Mandate protects the integrity of programmers’ contracts.

Nor can the Commission claim that the Information Flows at the heart of the Set-Top Box Mandate capture all of the contractual requirements negotiated between the relevant programmer and the MVPD and thereby ensure compliance with the contractual provisions. For

²¹² Alfred Liggins, *Protecting Consumer Choice, Not Special Interests, in Video*, The Tennessean (Dec. 3, 2015), <http://www.tennessean.com/story/opinion/contributors/2015/12/03/protecting-consumer-choice-not-special-interests-video/76744898/>.

²¹³ Letter from Ignacio Sanz de Acedo, CEO & General Manager, ¡HOLA! TV, to FCC Chairman Tom Wheeler, MB Docket No. 15-64, at 1 (Feb. 3, 2016) (“Where and how our channel appears on pay TV providers systems is critical to our success.”); *see also* Letter from Rob Rader, General Counsel, Ovation LLC, to FCC Chairman Tom Wheeler and Commissioners, MB Docket No. 15-64, at 1 (Feb. 11, 2016) (“Ovation Ex Parte”) (“We rely on negotiated channel positions and . . . to capitalize on channel surfing and to help maintain and increase our viewership for viewers. This discovery mechanism is critical for Ovation and other independent networks.”); Letter from Felix Sanchez, National Hispanic Foundation for the Arts, to FCC Chairman Tom Wheeler, MB Docket No. 16-42, at 1 (Mar. 21, 2016) (“MVPDs work diligently to build relationships with programmers, establish contracts and negotiate licensing agreements regarding channel placement, advertising restrictions, and many other terms. Latino programmers rely on these agreements to collect advertising revenue that can then be invested in quality content for their audiences.”).

²¹⁴ Content Companies Ex Parte at 1. The joint content companies include A&E Television Networks, AMC Networks Inc., Discovery Communications, NBCUniversal, Scripps Networks Interactive, the Walt Disney Company, Time Warner Inc., 21st Century Fox, and Viacom.

²¹⁵ Letter from Michael Schwimmer, CEO, Fuse Media, Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 1 (Jan. 21, 2016) (“Fuse Media Ex Parte”).

example, the Service Discovery and Entitlement Data Flows will not – and *cannot* – convey to third parties:

- Obligations regarding technical quality (e.g., preferred video resolution, frame rate, and compressed video and audio bit rates);
- Information relating to the display of VOD programming (e.g., network landing pages for VOD, approved VOD display folders; approved thumbnail/artwork images and any required use of network logos);
- Restrictions on the display of user search results (e.g., programming cannot appear in search results that include adult titles);
- Information for accurate ratings measurement (via Nielsen watermarks and software);
- Protections on the display of advertising (e.g., limitations on fast-forwarding, ad skipping, and other device functionality);
- Protections to ensure the display of programming as envisioned by the programmer, such as through limitations on the use of graphic overlays, crawls, and other “pop-ups” on the user interface or screen (e.g., product or program recommendations and advertising); and so forth.

MVPDs ensure that all of these contractual obligations are met through their user interfaces and apps, but will have no control over the presentation of their service and the integrity of programmers’ content on third-party devices and apps and no way to ensure that these obligations are met if the Set-Top Box Mandate is adopted. Nor will programmers have any way to enforce those contractual provisions. Consequently, third-party devices and apps could, for example, place family-friendly content adjacent to adult content, overlay their own ads on programming without compensation to the programmers, disregard negotiated promotional features (such as featuring a program on a “barker” channel), favor affiliated content, or require payment for priority in search results.

A further problem with the proposal is that, even with respect to programmer requirements that *are* included in the proposed Information Flows, such as instructions on the copying and outputting of content, there is no way for the MVPD or programmer to ensure compliance with entitlement requirements set out in their agreements. The Commission’s

proposal is premised on the fact that device makers and app developers will have *no* business-to-business relationships with MVPDs, so MVPDs would have no contractual remedy against those entities that disregard entitlements.²¹⁶ And the *Notice* provides no guidance as to how this regime is supposed to be policed, if at all. Are MVPDs supposed to monitor third-party devices and apps for compliance? How can MVPDs monitor devices when they have no physical or electronic access to the devices? If there is non-compliance, can the MVPD shut off service to the relevant device or app? What assurances can be provided to programmers and what recourse will they have? And does non-compliance create potential liability issues for MVPDs under their programmer contracts? The *Notice* has nothing to say about these issues.²¹⁷

Rather, the *Notice* merely dismisses these concerns about critical terms of programming agreements as theoretical given the lack of evidence of such harmful practices in the CableCARD context, and intends to let “marketplace forces” address them.²¹⁸ It is of course ironic that the *Notice* would invoke “marketplace forces” in this context when the entire focus of the rest of the *Notice* is on intrusive government intervention despite the overwhelming evidence that marketplace forces are working. It also is naïve for the *Notice* to take this view. Device manufacturers or other third parties have explicitly stated that they are not bound by the terms of

²¹⁶ Because the MVPD has no direct contractual relationship with the device maker or app developer under the Commission’s proposal, the Commission seeks to handle the enforcement indirectly. DRM and other content security vendors typically include so-called compliance rules in their licenses that, among other things, require the licensee to honor copy controls and output limits, among other things. The Commission aims to piggyback on those compliance terms. So, under the proposal, the MVPD could only use a content security system that is licensable on terms that that require licensees (i.e., third-party device makers and app developers) to comply with compliance rules. See *Notice* ¶ 71; see also *id.*, App. A (proposed 47 C.F.R. § 76.1200(k)). Here again, the Commission provides no guidance on what entity is responsible for policing compliance and how violations will be remedied and by whom.

²¹⁷ As Dr. Besen explains, “under the Commission’s proposal, there would be *no contractual relationships* between MVPDs and third-party device manufacturers or apps developers . . . so that the third parties would be free to *reduce* service quality if doing so increased their own profits.” Besen Decl. ¶ 22 (emphasis in original); see also *id.* ¶ 23.

²¹⁸ *Notice* ¶¶ 2, 80.

programming agreements when pursuing their own business models under the Commission's proposal,²¹⁹ and record evidence directly contradicts claims that device makers and app developers can be trusted to be good actors. For example, TiVo already has a feature that inserts pop-up ads over MVPD programming when viewers press the "pause" button.²²⁰ If such ad overlays are already happening with retail CableCARD devices, which constitute a very small share of the device marketplace, one can expect similar types of practices to occur under the Commission's Set-Top Box Mandate, and on a much larger scale than CableCARD.

²¹⁹ See, e.g., Letter from Consumer Video Choice Coalition to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 4 (Jan. 21, 2016) ("[M]akers and marketers of competitive devices cannot be expected to respect private, secret, and temporary pacts between and among MVPDs and content owners."); Letter from Devendra T. Kumar, Goldberg, Godles, Wiener & Wright LLP, Counsel for TiVo, Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 1 (Jan. 13, 2016) ("TiVo Representatives made clear that competitive device providers are not and should not have to be bound to programming contracts entered into by MVPDs to which they were not party."); Public Knowledge Comments, MB Docket No. 15-64, at 14 (Oct. 7, 2015) ("CableCARD operators have no privity with programmers and are not required to follow any private agreements about content display that may exist between MVPDs and programmers."); Computer & Communications Industry Association (CCIA) Reply Comments, MB Docket No. 15-64, at 10 (Nov. 9, 2015) ("Device manufacturers, of course, cannot violate contracts to which they are not a party."); Electronic Frontier Foundation Comments, MB Docket No. 15-64, at 2 (Oct. 9, 2015) (urging the Commission to "allow new entrants to compete in the features they offer to the end user, rather than in the functionality withheld from the user *at the request of rightsholders or intermediaries*") (emphasis added); DSTAC Meeting Transcript at 38-39 (Mar. 24, 2015) (quoting a Public Knowledge representative as saying that "I completely understand how an operator might have agreed to channel numbers and channel line ups but . . . many of the sort of fundamental concepts, things like channel numbers, really may not flow through to a retail environment and a lot of those sorts of restrictions that operators have agreed to may not make any sense in a retail place."); *id.* at 96-97 (quoting a TiVo representative as saying that "operators have made agreements where there's not a disaggregation perhaps with the content owners, [but] those should not necessarily apply to a third party device which should have the freedom to not be bound").

²²⁰ See TiVo Advertising, Pause Menu, <https://www.tivo.com/tivoadvertising/pausemenu.html> ("Pause Menu gives advertisers an unprecedented opportunity to reach viewers as they are tuned-in and interacting with live and time-shifted programming. When viewers hit pause, additional ad messaging appears in a screen overlay, making it easy and convenient for them to access your ad content."); see also Letter from Neal M. Goldberg, Vice President & General Counsel, NCTA, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 2 (Jan. 21, 2016); Letter from Rick Chessen, Senior Vice President, Law and Regulatory Policy, NCTA, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 5 (Jan. 15, 2016) ("Jan. 15 NCTA Ex Parte"). TiVo also states that "Pause Menu buys are also very flexible and can be targeted by program, series, and genre audiences as well as descriptive keywords." *Id.*; see also Press Release, TiVo Expands Ad Solutions Portfolio, Enables Advertisers to Reach Viewers When Programming Is Paused (Dec. 9, 2008), <http://investor.tivo.com/phoenix.zhtml?c=106292&p=irol-newsArticle&ID=1252943> (noting that initial "Pause Menu" ad campaigns would promote products such as Mercedes-Benz SUV's and movies released on DVD and Blu-ray). Programming networks, copyright holders, and MVPDs have no say in whether these ad overlays are consistent with their own values and commercial interests and receive no compensation for the interruption of their content. Nothing prevents such ad overlays from promoting competing products or services or from distracting viewers' attention from advertising purchased from MVPDs in connection with specified programming.

The ultimate effect of the Commission’s proposal is that it will undermine programmers’ ability to negotiate with MVPDs with certainty on aspects of content integrity and content promotion that are vital to programmers’ ability to obtain and monetize content. As Dr. Besen explains, such a result threatens the availability of high-quality programming: “If third parties were to engage in behavior that undermined the contractual benefits for which programmers have negotiated, their revenues, and thus their incentives to create programming, would decline.”²²¹

C. The Set-Top Box Mandate Would Create Particular Hardships for Independent and Diverse Programmers.

The *Notice* has said that the proposal “will make it easier for consumers to find and watch minority and special interest programming” and will otherwise create “additional opportunities for programmers, who may not have an arrangement with an MVPD, to reach consumers.”²²² Independent and diverse programmers overwhelmingly disagree and, in fact, point out that the Set-Top Box Mandate will significantly harm them.²²³

TiVo and other device makers could today make such programming easier to find and watch, but they do not because they have no incentive to do so absent extracting rents from such programmers. The *Notice* never explains why they would do so when they suddenly receive free access to thousands of hours of programming from MVPDs. Moreover, numerous programmers have said that the putative benefits from any such carriage opportunities would be far

²²¹ Besen Decl. ¶ 16.

²²² *Notice* ¶ 17.

²²³ It bears noting that Comcast has a strong record of supporting and fostering independent and diverse programming. *See, e.g.*, Comcast Comments, MB Docket No. 16-41, at 16-21 (Mar. 31, 2016).

outweighed by the harms of the Commission’s proposal. For example, Frank Washington, CEO of Crossings TV, notes that:

We are in the midst of a revolution – one that is allowing television and video to service the multicultural world that is the America we celebrate. . . . Yet worrisome new federal regulations . . . have thrown a dark cloud over this revolution – one that could deprive many communities of the tailored, in-language program options we have worked so hard to provide.”²²⁴

Independent and diverse programmers have underscored that they are particularly vulnerable to the loss of advertising revenue resulting from channel displacement that would make them harder to find in any search or guide or advertising from the device or app developer.²²⁵ Diverse programmers are rightly concerned that, without any contractual guarantees, third-party device manufacturers have no incentive to showcase their content – or even carry it at all. Alfred Liggins warned that allowing third parties to ignore programming terms could result in “a new form of digital ‘redlining’ that could bury diversity programming in the farthest reaches of the program guide.”²²⁶ Other diverse programmers have warned that the

²²⁴ Frank Washington, Opinion, *A New Threat to Diversity on TV*, The Seattle Times (Mar. 8, 2016), <http://www.seattletimes.com/opinion/a-new-threat-to-diversity-on-tv/>.

²²⁵ See, e.g., Letter from Michael Schwimmer, CEO, Fuse Media, Inc., to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 2 (Jan. 21, 2016) (warning of disproportionate harm to programmers that “serve minority niche audiences, such as Latinos, African Americans, LGBT Americans, and others who do not tend to fit into advertisers’ buying habits or Pay-TV companies’ business models and whose programming choices already are limited by a media market that still is not as diverse as America”); Ovation Ex Parte at 1 (expressing concern that third parties “could, at their sole discretion, rearrange, television channel lineups and position specialized niche channels like Ovation where it could be very difficult, if not impossible to find” and that such parties “would also be in a position to display competing advertising and even direct viewers to a competing network, just like the search and social sites currently do online to promote their own services”); Letter from Pricilla Ouchida, Executive Director, Japanese American Citizens League, to FCC Chairman Tom Wheeler and Commissioners, MB Docket No. 16-42, at 1 (Mar. 29, 2016) (“[W]e urge the Commission to review any proposal for new regulations that would force the unbundling of television programming and undermine decades of progress in minority media ownership and representation, depriving communities of color of relevant and meaningful programming tailored to their interests, languages, and experiences. In our view, a healthy and thriving market like this is not the place to experiment with sweeping new rules.”).

²²⁶ Alfred Liggins, *Protecting Consumer Choice, Not Special Interests, in Video*, The Tennessean (Dec. 3, 2015), <http://www.tennessean.com/story/opinion/contributors/2015/12/03/protecting-consumer-choice-not-special-interests-video/76744898/>.

proposal would give third parties the incentive “to cherry-pick among the diverse content and programmers they provide to consumers.”²²⁷ The Commission’s proposal would place such decisions in the hands of third parties without even attempting to address these legitimate risks.²²⁸ Accordingly, leading civil rights organizations have urged the Commission to “hit the ‘pause’ button on this proceeding” to evaluate whether it would “result in less diversity and fewer successful minority programmers and content producers.”²²⁹

D. The Set-Top Box Mandate Would Restrict Programmers’ Ability To Experiment with New Business Models and Features.

The hallmarks of today’s video marketplace are rapid innovation and experimentation with a wide variety of business models. Content creators rely on multiple exhibition and platform windows to recover the costs of producing, marketing, and distributing new content, and, as the DSTAC Report noted, segment the market in other ways.²³⁰ Under the Commission’s

²²⁷ Letter from Melanie L. Campbell, President & CEO, National Coalition on Black Civic Participation, to FCC Chairman Tom Wheeler, MB Docket No. 15-64, at 2 (Feb. 11, 2016); *see also* Letter from Multicultural Media, Telecom, and Internet Council (MMTC), to FCC Chairman Tom Wheeler, MB Docket No. 15-64, at 2-3 (Feb. 11, 2016) (“In our view, diverse and independent programmers and content creators would experience negative impacts on channel placement, advertising scheduling and other critical elements that have increased the visibility and profiles of these networks in a crowded video marketplace.”).

²²⁸ The Commission suggests that programmers retain “rights or remedies under copyright law,” providing a sufficient reason not to address these concerns in its rules, *see Notice* ¶ 80, but programmers should not have to pursue expensive litigation against device makers and app developers after violations and harm have already occurred to try to protect their rights, *see* Letter from Members of the Congressional Black Caucus to FCC Chairman Tom Wheeler (Dec. 2, 2015), <https://clarke.house.gov/media-center/press-releases/congresswoman-clarke-and-cbc-members-caution-fcc-chairman-wheeler-all> (“All Vid will cause irreparable harm to independent and minority programmers by allowing third parties to strip programming from visible channel placements and relegate it to the bottom of the pile.”).

²²⁹ Letter from Civil Rights Organizations to FCC Chairman Tom Wheeler, MB Docket Nos. 16-41, 16-42, CS Docket No. 97-80, at 2 (Mar. 21, 2016) (noting that “[h]istorically, civil rights organizations have been opposed to an *a la carte* television ecosystem, driven by consumer choice, because of the financial impossibility for minority and independent programmers to sustain new content if few people are watching.”); *see also* Rep. Henry Waxman, *FCC Cable Box Proposal Affects More Than Just Cable Boxes*, The Hill (Mar. 21, 2016), <http://thehill.com/blogs/congress-blog/technology/273590-fcc-cable-box-proposal-affects-more-than-just-cable-boxes> (“Minority content providers in particular lack the scale and resources to absorb the revenue losses, channel dislocation, and other harms that would result.”).

²³⁰ “For example, they impose geographic and mobility restrictions on distribution, such as distinguishing the right to distribute content in-home versus out-of-home, or licensing on some devices or DRM systems but not others. Not all content is licensed for reception on all devices. Licensors typically value their content higher when

proposal, content owners may no longer be able to choose their distributors, segment the market, or experiment with a new offering on just one platform. The *Notice*'s parity requirements would force MVPDs to provide equal access to content on third-party devices or apps.²³¹

Consequently, if a programmer wanted to experiment with a new offering with an MVPD, the MVPD would have to make that offering available to third-party devices and apps as well.²³²

Essentially, content creators would be limited to a single window and a single opportunity to monetize their creations. That could change the programmer's calculus about whether to launch the offering in the first place.²³³

In addition to innovative business models, programmers are also experimenting with new viewing features like social media integration. For example, as broadcasters transition to ATSC 3.0 and its HTML5-based capabilities, the new standard will allow them to integrate innovative personalization and interactive features that add value to their programming and enhance consumers' viewing experience, while also providing programmers, broadcasters, and networks

distribution is closer to its original release than at later dates, and content at a higher resolution is generally valued higher than at lower resolution. Thus, certain platforms or devices that have a higher level of security may enjoy higher resolution content or earlier release window content than devices with a lower level of security." DSTAC Report at 33.

²³¹ The implications of the parity requirements are further discussed *supra* Section VI.C and *infra* Section VIII.

²³² In fact, the *Notice* specifically asks about whether programmers prohibit MVPDs from displaying their programming on certain devices and, if so, what are the terms and "[s]hould the Commission ban such terms to assure the commercial availability of devices that can access multichannel video programming, and under what authority." *Notice* ¶ 18. However, such terms are generally intended to ensure that devices meet specified minimum security requirements and are not aimed at limiting consumer options. And, in any event, it is doubtful that the Commission has the authority to abrogate such licensing terms absent clear authorization from Congress. *See, e.g., California Water and Telephone Co.*, Memorandum Opinion and Order, 64 F.C.C.2d 753 ¶ 17 (1977); *Bauers v. Heisel*, 361 F.2d 581, 587 (3d Cir. 1966).

²³³ It bears noting that no similar restrictions would apply to online distribution of content, so the Commission's proposal may create incentives for programmers to experiment with new offerings with online distributors rather than MVPDs.

with potential new opportunities to monetize their content and recover the costs of production.²³⁴ Just as third parties can ignore MVPDs' innovative service features under the Commission's Set-Top Box Mandate, so too could they ignore any innovative viewing enhancements programmers, broadcasters, and networks may offer.

VIII. THE SET-TOP BOX MANDATE WOULD JEOPARDIZE CONTENT SECURITY AND PROTECTION AND FACILITATE PIRACY.

The Commission's proposal requires MVPDs to support at least one content protection system that would be licensed to third-party device manufacturers and app developers only on reasonable and non-discriminatory ("RAND") terms, and would involve a Trust Authority that is not substantially controlled by any MVPD.²³⁵ In the *Notice's* view, its proposal will "ensure the same security for copyrighted material as the traditional set-top box[,] . . . will allow each MVPD to determine the content protection systems it deems sufficient to prevent theft and misuse, and will not impede the introduction of new content protection systems."²³⁶

However, the Commission's Set-Top Box Mandate would severely undermine the security of MVPDs' services and lead to theft of MVPD service and theft of programmers' content; content that is once stolen can easily be copied and distributed worldwide in a matter of hours, a cat that will never be put back in the bag. In particular, the Set-Top Box Mandate limits the security options for MVPDs and could very well require that MVPDs implement security

²³⁴ This includes opportunities for interactive content, social media integration, and advanced advertising.

²³⁵ See *Notice* ¶ 60. It is ironic that the Commission would allow MVPDs to have their pick of content security solutions under the proposal, while at the same time concluding that the HTML5-based app solution is "not consistent with our goals in this proceeding [because it leaves] total control of security decisions to MVPDs." See *id.* ¶ 57. There is no difference between the Commission's proposal and the HTML5 app solution in this regard.

²³⁶ Fact Sheet, FCC Chairman Proposal To Unlock The Set-Top Box: Creating Choice & Innovation, at 2 (Jan. 27, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-337449A1.pdf. The Commission makes this proposal while freely admitting that it does not know if DRMs and other content security systems are licensed on RAND terms today. See *Notice* ¶ 61.

options that may not sufficiently protect content; removes key mechanisms for ensuring secure delivery of MVPD content; and creates other vulnerabilities, all in contravention of the clear directive in the navigation device statute that the Commission not adopt rules that would jeopardize security.²³⁷ The Commission's proposal will weaken the content security system and potentially put MVPDs in violation of contractual obligations to programmers – all of which undermine the trusted environment MVPD apps create and make content more vulnerable to piracy.²³⁸

Limiting DRM Options and Chilling DRM Innovation: Requiring that MVPDs support a “Compliant Security System” (i.e., one that is available on RAND terms) effectively limits the range of security solutions upon which MVPDs can rely.²³⁹ This approach potentially forecloses DRM and other options that may do a superior job of securing video and meeting the demands of programmers, but are not licensed on RAND terms.²⁴⁰ The RAND requirement could also

²³⁷ See 47 U.S.C. § 549(b) (prohibiting the Commission from prescribing rules that would jeopardize the security of MVPD programming or impede an MVPD's ability to prevent theft of service); see also H. Rep. No. 104-204, at 112 (1995) (“The Committee . . . does not authorize the Commission to adopt regulations which would jeopardize the security of a telecommunications system.”); see also Werner Decl. ¶¶ 21-25.

²³⁸ MVPD agreements with programmers often contain highly detailed and technical contractual provisions, such as (but not limited to) the length of cryptographic ciphers used for content protection, the frequency of decryption key rotations, cryptographic binding of content to recording devices, applying copy control and link encryption on device outputs, ensuring the integrity of embedded operating systems, the use of signed code and tamper-resistant software techniques, DRM upgrades and renewability, and the ability to revoke compromised devices.

²³⁹ Recognizing that “[c]opyright laws have struggled through the years to keep pace with emerging technology,” Congress passed the Digital Millennium Copyright Act of 1998 (“DMCA”), see 17 U.S.C. §§ 1201-1204, which “encourages technological solutions . . . by enforcing private parties’ use of technological protection measures with legal sanctions for circumvention.” S. Rep. No. 105-190, at 2, 11 (1998). The Commission’s proposal, however, would undermine those efforts – and conflict with the DMCA – by forcing standardization of technological protection measures and depriving programmers and MVPDs of their rights under the DMCA to employ copyright protections and anti-circumvention measures of their choice, flouting Congress’s stated intent.

²⁴⁰ See Werner Decl. ¶ 22. Cf. *Digital Output Protection Technology and Recording Method Certifications*, Order, 19 FCC Rcd. 15876 ¶ 91 (2004) (“*Broadcast Flag Order*”) (noting that “our concern that a particular technology will become a *de facto* standard associated with an unreasonable licensing fee has been adequately addressed by the number and variety of technologies we are approving”).

discourage innovation in the security marketplace. The DSTAC Report detailed the wide variety of DRM and other content security technologies and vendors, as well as the wide-scale use of such technologies by devices and apps today.²⁴¹ In this vibrant marketplace, content security vendors compete with each other to develop security technologies that stay one step ahead of hackers, pirates, and other threats to the video ecosystem. A vendor might not have the same incentives to improve security technology that must be licensed on RAND terms, as opposed to commercial terms that respond to marketplace demand.²⁴² It bears noting that the Commission has typically refrained from mandating particular licensing regimes for technologies that may be needed to comply with Commission requirements, particularly where multiple competitive technologies are available and there is no evidence that market participants have engaged in anticompetitive conduct.²⁴³ The *Notice* does not explain why it is now departing from that approach.²⁴⁴

²⁴¹ See DSTAC Report at 75 (“DSTAC Working Group 3 conducted a review of 16 existing security system solutions and components including both hardware (SoC) and software.”).

²⁴² See Werner Decl. ¶¶ 21-22.

²⁴³ The Commission generally lacks the expertise to evaluate such licensing issues, and has refrained from adopting specific licensing requirements in prior rulemakings. For example, in the Commission’s 2004 Broadcast Flag proceeding, certain commenters urged the Commission to impose RAND requirements on the licensing of output protection technologies. The Commission declined to do so, concluding that the “record in this proceeding does not support the Commission’s adoption of one approach to intellectual property licensing over another,” and that “we find no evidence ... that the RAND approach advocated by [commenters] is inherently preferable in all circumstances.” *Broadcast Flag Order* ¶ 91. The Commission specifically noted that parties alleging anticompetitive licensing could bring claims in antitrust forums and reserved the right to “to reconsider its approvals should a federal court determine that a technology proponent, through its licensing terms or otherwise, violates the federal antitrust laws,” or upon request by the Department of Justice or the Federal Trade Commission. *Id.* The Commission also urged parties to “bring concerns to the Commission for appropriate action,” stating that it would continue to monitor the issue and revisit its approach if necessary. *Id.*

²⁴⁴ The Commission also provides no evidence that device makers or app developers are having any difficulty licensing DRM and other content security solutions in the existing marketplace. MVPDs do not control the licensing of these solutions— that is controlled by the vendors – so the notion that MVPDs could somehow interfere with a device maker’s or app developer’s access to a security solution is unfounded. Comcast, for example, relies on two DRMs that are widely used in the marketplace today by MVPDs and non-MVPDs alike: Microsoft PlayReady and Adobe Access. The Commission’s proposal appears to track the licensing model for Google’s Widevine DRM, and may have the indirect effect of favoring this security solution.

Chain of Trust: DRMs and other content protection methods are just one part of the “chain of trust” MVPDs employ to ensure adequate content protection and compliance with their contractual obligations with programmers. The *Notice*’s disaggregation mandate, however, would strip MVPDs of the various tools they use to create a trusted environment for content and create wide security gaps that are not addressed by DRMs and other content security systems. This would necessarily result in significant risks to theft of service and piracy of content once that service was stolen.²⁴⁵

With apps, MVPDs can monitor and detect potentially fraudulent and/or abusive viewing patterns such as unauthorized credential sharing and abnormal VOD transaction history tied to a particular account and also ensure that programmer usage rules (e.g., restrictions on the number of registered devices/concurrent streams per user account) are honored. MVPDs also rely on their own user interfaces and apps to implement other security configurations, such as geographic restrictions for content; secure boot (i.e., an authorized device verification mechanism); “signed code” that matches a security certificate and other software tamper-resistance mechanisms; content watermarking, which helps track the source of pirated content, and other security requirements specific to VOD; additional device output controls and copy restrictions;²⁴⁶ and security requirements for HD video (and, in the near future, higher security requirements for Ultra HD video) that programmers require.²⁴⁷

Through apps and user interfaces, MVPDs are also able to ensure that MVPD programming is not displayed next to pirated content which would undermine the value of the

²⁴⁵ Werner Decl. ¶ 23.

²⁴⁶ While, as described above, the Commission’s proposal contemplates that copy control information will be implemented by the DRM, not all DRMs are capable of doing so.

²⁴⁷ *See id.*

programming. By removing these safeguards, the Set-Top Box Mandate could result in pirated content being presented alongside legitimate MVPD content through a third party's search function. Moreover, because the Commission's proposal places no limits on third-party devices and apps that want free access to MVPD content, even known IP thieves that make boxes loaded with apps for pirated content could get such access as a means to facilitate their ongoing piracy. Such piracy undermines the value of commercial video content, particularly if the legitimate version is being offered on a pay-per-view or subscription VOD basis while the pirated content is made available for free.²⁴⁸

Trust Authorities and Authentication: Forcing MVPDs to rely on an independent Trust Authority to issue security certificates and encryption keys to third-party devices and apps is inconsistent with current security practices and leaves content more vulnerable to piracy by forcing MVPDs to hand over keys to all of their content to a third party. Relatedly, the Commission's proposal fails to address device authentication. As part of issuing its own certificates and keys, Comcast also ensures accurate device and user/account authentication through its app, which programmers generally require, and are necessary to implement other security functions and configurations to protect content. Eliminating MVPD involvement from this critical task would further jeopardize today's secure content environment.²⁴⁹

Testing and Certification: The *Notice* believes that MVPDs should not have any role in testing and certification processes for ensuring that third-party devices and apps do not cause

²⁴⁸ The need to ensure software integrity is not limited to content protection and piracy. Without strict code verification checks, third-party devices and apps are vulnerable to hacking threats. Third-party devices and apps that fall outside of MVPDs' technical and business control potentially subject MVPD subscribers to significant risks, such as phishing attacks and malware.

²⁴⁹ Werner Decl. ¶ 24. To the extent the Commission mandated the use of a third-party Trust Authority, it provides no guidance how that entity would be selected or who would pay for it.

harm to the network or facilitate service theft.²⁵⁰ Testing and certification are essential to protecting the network and guarding against service theft. For example, Comcast operates a testing and certification program for cable modems, resulting in approval of over 50 retail modems from a wide variety of manufacturers.²⁵¹ Comcast should be allowed to handle testing and certification for other categories of navigation devices that want to attach to its network. As noted above, there are differences in MVPD network architectures, so Comcast, like other MVPDs, has a strong interest in ensuring that devices used to access its cable service do not create network or service harms.²⁵²

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Ultimately, the effect of the Commission’s Set-Top Box Mandate is a *less* secure environment that facilitates rather than guards against piracy.²⁵³ This creates risks for the entire video ecosystem. The ability of programmers to acquire distribution rights to compelling entertainment and sports content is critically dependent on their ability to negotiate with certainty that MVPDs will enforce content protection requirements. However, the Commission’s proposal eliminates these certainties.

²⁵⁰ Instead, the Commission suggests that such testing and certification be handled by a qualified test facility, along the lines of the approach under the CableCARD regime. *See Notice* ¶ 72. Eliminating MVPDs from the testing and certification process may also degrade the user experience if devices fail in a timely manner due to operational challenges with a third-party Trust Authority. More specifically, Comcast and other MVPDs would be prohibited from implementing real-time keying and authentication, which addresses latency issues.

²⁵¹ Comcast, DOCSIS Device Compatibility and Capability, <http://mydeviceinfo.xfinity.com/>. This program has been praised by Zoom, a manufacturer of retail modems. *See* Zoom Telephonics, Inc., Petition to Deny, or in the Alternative, for Conditional Grant, MB Docket No. 15-149, at 8 (Oct. 14, 2015) (observing that Comcast has “expansive policies” with respect to connection of customer-owned modems, and that “[i]ts website contains a list of 56 Comcast certified DOCSIS 3.0 compliant cable modems from 13 companies, including Zoom. At least 17 of these cable modems include wireless router or telephony capabilities. Several of them have 802.11ac capability.”).

²⁵² Werner Decl. ¶ 25.

²⁵³ It also has the unintended consequence of incentivizing programmers to distribute their most compelling and valuable content on non-MVPD platforms.

IX. THE SET-TOP BOX MANDATE WOULD WEAKEN PRIVACY AND OTHER CONSUMER PROTECTIONS.

In the *Notice*, the Commission underscores the importance of consumer protection obligations like consumer privacy, emergency alerts, and advertising limits on children’s programming (“KidVid” requirements), noting that “[i]t is essential that any rules we adopt . . . do not undermine other important public policy goals . . . which are achieved by means of requirements imposed on MVPDs.”²⁵⁴ However, because it lacks the authority to impose these obligations directly on device manufacturers and app developers, the Commission proposes to leave these important consumer protections to a certification regime – akin to an honor system – where these entities would self-certify compliance to MVPDs.²⁵⁵ In turn, MVPDs would be required to provide the Information Flows only to certified entities, effectively placing enforcement responsibilities on MVPDs themselves.²⁵⁶ As explained further below, this regime is entirely unworkable, beyond the Commission’s authority, and – notwithstanding the Commission’s assurances²⁵⁷ – would ultimately weaken these key consumer protections.

In effect, the *Notice* is creating significant consumer protection issues with its proposal, and then shrugging its shoulders and walking away from those problems without any credible plans for addressing them. The Commission cannot simply blind itself to problems of its own making simply because it does not have jurisdiction to address them directly (i.e., by imposing

²⁵⁴ *Notice* ¶ 73.

²⁵⁵ *Id.*

²⁵⁶ *Id.*

²⁵⁷ *Id.* ¶ 2 (claiming that the proposal would “ensure that public interest requirements involving emergency alerts, consumer privacy, and children’s programming advertising limits continue to be met”); *see also id.* at 1601 (statement of Chairman Tom Wheeler) (“The proposal will *not* harm consumer privacy. The proposal tentatively concludes that the privacy protections that exist today will also apply when alternative navigation devices are used.”) (emphasis in original); Fact Sheet, FCC Chairman Proposal To Unlock The Set-Top Box: Creating Choice & Innovation, at 2 (Jan. 27, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-337449A1.pdf (stating that the “proposal seeks to ensure that important consumer protections like emergency alerting, privacy, and children’s advertising restrictions will apply”).

requirements directly on device makers and app developers). Creating a major risk of consumer harms that MVPDs cannot protect against is not in the public interest or reasonable decision making. The Commission’s approach is all the more indefensible given the fact that the existing MVPD distribution methods – whether through set-top boxes or apps running on third-party devices – *already* assure privacy and other consumer protections.

A. Privacy Protections

Today, MVPDs are subject to a strict set of congressionally mandated privacy obligations.²⁵⁸ In particular, these rules restrict how MVPDs may collect, use, disclose, and provide access to their subscribers’ personally identifiable information (“PII”), including restrictions on disclosing data regarding (i) an individual subscriber’s viewing of video programs or other uses of the cable operator’s services, and (ii) the details of any transaction made by the individual subscriber over the cable system without prior customer consent.²⁵⁹ MVPDs are even prohibited from disclosing subscriber viewing history to the Commission or other government agency without a court order.²⁶⁰ Congress further gave a Title VI private right of action in federal court for classes of subscribers to get statutory damages if cable and satellite providers break privacy obligations.²⁶¹ MVPDs are subject to these requirements regardless of whether customers are accessing their MVPD service through a set-top box or a retail device via an

²⁵⁸ In particular, these privacy protection are set out in Section 631 (for cable operators) and Section 338 (for satellite providers) of the Communications Act. *See* 47 U.S.C. §§ 338, 551.

²⁵⁹ *See* 47 U.S.C. §§ 338, 551. Moreover, cable and satellite providers must provide subscribers access to review and correct any PII held about them, and must destroy PII if the information is no longer necessary for the purpose for which it was collected and no pending court or other order exists for the data.

²⁶⁰ *Id.*

²⁶¹ *Id.*

MVPD app. As the Commission has recognized, these requirements would not apply to third-party device manufacturers or app developers under its proposal.²⁶²

The Commission’s proposal would require MVPDs to disclose customer entitlement information, including the networks customers receive and VOD purchases, to third parties absent customer consent, which arguably would place MVPDs in violation of their obligations under Section 631 (for cable operators) and 338 (for satellite providers).²⁶³ Although Sections 338 and 631 allow disclosure of such information if it is “necessary to render, or conduct a legitimate business activity related to, [an MVPD] service or other service provided by the [MVPD] to the subscriber,”²⁶⁴ the Commission has done nothing to show how its proposal fits under these exceptions.²⁶⁵ Regardless of whether the Commission believes that the disclosure falls within one of the exceptions, cable operators would be the ones at risk of being sued under Section 631 given that consumers have a private right of action against them.

²⁶² See *Boxed In: MVPDs sound off – and FCC pushes back – on game-changing new set-top proposal*, Multichannel News (Feb. 8, 2016), <http://www.multichannel.com/news/content/boxed/397188> (The Commission acknowledged that these regulations “apply to MVPDs only.”).

²⁶³ Comcast does not disclose this type of personalized information to third parties today. In the CableCARD context, the CableCARD mediates device access to entitlement information (i.e., the CableCARD checks to see if customer is authorized to receive a channel, and if so, it decrypts the channel for access on the device).

²⁶⁴ Section 631 permits disclosure if it is “necessary to render, or conduct a legitimate business activity related to, a cable service or other service provided by the cable operator to the subscriber.” 47 U.S.C. § 551. Section 338 likewise states that disclosure is permissible if it is “necessary to render, or conduct a legitimate business activity related to, a satellite service or other service provided by the satellite carrier to the subscriber.” *Id.* § 338.

²⁶⁵ First, the exemption only applies to services provided by the cable operators and satellite providers, and arguably a derivative third-party service does constitute such a service. Second, even if the third-party service did qualify, the MVPD service being provided is the single channel to which a customer attempts to tune. Mandating that a cable operator disclose to a third party all the programming networks a customer is entitled to prior to the customer’s programming request seems overly broad. Finally, Congress could not have contemplated that the Commission would be able to get around obtaining a court order simply by mandating that cable operators provide entitlement data to third parties first (and then the third party could provide subscriber viewing information) by claiming the cable operator must do so because disclosure is “necessary to render, or conduct a legitimate business activity related to, a cable service or other service.”

The *Notice* believes these concerns can be addressed by having device makers and app developers self-certify that they will comply with Title VI privacy protections,²⁶⁶ but the *Notice* overlooks the fundamental barrier that MVPDs are in no position to enforce such certifications. Nothing in the proposal empowers MVPDs to confirm that certifying third parties do in fact comply with these requirements before making MVPD Information Flows available to them.

More importantly, even if such a preliminary check were contemplated, there is simply no practical way for MVPDs to monitor the activities of third parties on an ongoing basis.²⁶⁷ MVPDs would have no insight into how third parties are handling consumers' PII. So MVPDs and consumers would have to trust that companies like Google – whose entire business model is based on collecting, using, sharing, and monetizing huge amounts of consumer data for advertising and other purposes – would honor these unenforceable certifications when potential violations are virtually undetectable.²⁶⁸ In the event of a breach, consumers would have no

²⁶⁶ See *Notice* ¶ 76 (seeking comment on how MVPDs could ensure that they do not provide Information Flows to uncertified devices, or that these Information Flows are no longer provided if there are any lapses in compliance following certification).

²⁶⁷ Nor is there any suggestion in the *Notice* that the Commission would be in a position to monitor and ensure compliance.

²⁶⁸ Google and other supporters of the Commission's proposal have a poor track record on respecting consumer privacy. See, e.g., Andy Greenberg, *Rating Tech Giants on Privacy: Google Slips, WhatsApp Fails*, WIRED (June 18, 2015), <http://www.wired.com/2015/06/rating-tech-giants-privacy-google-slips-whatsapp-fails/> (“The web giant no longer tells users the full extent of its data retention, a lack of transparency that the [Electronic Frontier Foundation] says has grown as Google has launched more products and services.”). In particular, Google paid \$17 million to settle a case brought by 28 state attorneys general after it circumvented browser privacy settings to track users' web browsing without their consent. See Gerry Smith, *Google to Pay \$17 Million Fine for Secretly Following You Online*, Huffington Post (Nov. 18, 2013), http://www.huffingtonpost.com/2013/11/18/google-safari-privacy_n_4296867.html. Google also paid a \$22.5 million fine in a separate case brought by the Federal Trade Commission over similar charges that it bypassed privacy settings in its Safari browser, in violation of a prior FTC order against Google prohibiting such activity. That fine was one of the largest settlements ever obtained by the FTC. See Gerry Smith, *FTC: Google to Pay Record Fine Over Safari Privacy Violation* (Aug. 9, 2012), http://www.huffingtonpost.com/2012/08/09/ftc-google-fine-safari-privacy-violation_n_1760281.html; Press Release, FTC, Google Will Pay \$22.5 Million to Settle FTC Charges it Misrepresented Privacy Assurances to Users of Apple's Safari Internet Browser (Aug. 9, 2012), <https://www.ftc.gov/news-events/press-releases/2012/08/google-will-pay-225-million-settle-ftc-charges-it-misrepresented>. Google also tracked the activities of nearly 50 million students and teachers using its Google for Education initiative without giving parents a way to opt out. See Andrea Peterson, *Google Is Tracking Students as It Sells More Products to Schools, Privacy Advocates Warn* (Dec. 28, 2015), <https://www.washingtonpost.com/news/the-switch/wp/2015/12/28/google-is-tracking-students-as-it-sells->

ability to seek redress against these third parties in court under the Act. It would also be patently unfair for the Commission to hold MVPDs accountable for such breaches when the MVPD has no contractual relationship with – and no means for contractual remedies against – these third parties.²⁶⁹

But even assuming the MVPD *could* detect a privacy violation by the third-party device maker or app developer, the *Notice*'s proposed remedy to de-certify that third party from being able to receive the MVPD's Information Flows further highlights the anti-consumer nature of this proposal.²⁷⁰ Not only would such a “remedy” fail to address or resolve the consumer's privacy harm, but the consumer would also be deprived of any use of the third-party device that she presumably purchased, and would then have to either purchase yet another third-party device, lease a set-top box from the MVPD, or access the MVPD's programming via the MVPD's app on various devices. In short, the de-certification remedy underscores both that the Commission's proposal is at odds with itself and that the apps-based approach is a consumer-

[more-products-to-schools-privacy-advocates-warn/](#). Likewise, Vizio reportedly tracked its customers' viewing habits and shared them with advertisers and others without consent and its defense has been that existing Commission privacy protections do *not* apply to its business. See Kalev Leetaru, *When Our Televisions Watch Us in Our Homes* (Nov. 13, 2015), <http://www.forbes.com/sites/kalevleetaru/2015/11/13/when-our-televisions-watch-us-in-our-homes/#478dba877804>.

²⁶⁹ In other contexts, even where MVPDs are able to enforce compliance with certain consumer protection obligations by contract, the Commission has determined that such contractual remedies were inadequate. Specifically, with respect to closed captioning obligations, the Commission initially deemed MVPDs responsible for compliance for caption quality obligations and enabled MVPDs to enforce compliance through contractual remedies. The Commission subsequently found that such contractual remedies were inadequate and deemed programmers directly responsible for compliance. See *Closed Captioning of Video Programming, Telecommunications for the Deaf and Hard of Hearing, Inc. Petition for Rulemaking*, Second Report and Order, 31 FCC Rcd. 1469 (2016) (“*Captioning Compliance Order*”). Here, however, there is not even a contractual mechanism for MVPDs to hold third-party device manufacturers and app developers responsible for these consumer protection obligations, so it is difficult to see how the Commission can credibly believe that MVPDs could reasonably rely on a simple self-certification by the third party. MVPDs would be in legal jeopardy at the outset under the Commission's approach.

²⁷⁰ See *Notice* ¶¶ 75-76.

friendly solution that Commission would be best off embracing in the first instance, thereby avoiding all of the costs and consumer harms described herein.

The *Notice*'s suggestion that state and European Union ("EU") privacy laws can provide adequate protections to consumers given the "national market for consumer technology" and "global economy" is nonsensical.²⁷¹ In adopting Section 631, Congress determined that existing state laws were inadequate, and that "a national policy" was needed to ensure adequate privacy protections for cable subscribers.²⁷² Relying on various state laws and EU protections would wholly ignore that congressional determination and cannot replace this national, federal policy.²⁷³

B. Emergency Alert System Messages

MVPDs today are also required to transmit EAS messages, which play an important role in national security and public safety.²⁷⁴ While under the apps model MVPDs can ensure that EAS messages are delivered via MVPDs' apps on retail devices (as noted above), MVPDs and their customers would have no such assurances under the Commission's proposal. The *Notice* contemplates that EAS messages would be included in the definition of "Navigable Services," which all MVPDs would provide to third parties as part of the three Information Flows.²⁷⁵ But this proposal does not account for the diverse ways that MVPDs deliver EAS messages today

²⁷¹ See *id.* ¶ 77.

²⁷² H.R. Rep. No. 98-934, at 30 (1984); see also NTIA Letter at 6 n.27 ("As for state laws, the baseline privacy protection a subscriber receives should not hinge on where the consumer lives.").

²⁷³ As is the case with the Commission's new broadband privacy proposal, the Commission's proposal here is not only ultra vires and unsupported by marketplace facts, but is also focused on the same goal of unjustifiably putting the Commission's thumb on the scale for the favored technology companies.

²⁷⁴ See 47 U.S.C. §§ 544(g), 606; see also 47 C.F.R. § 11.1 *et seq.*

²⁷⁵ See *Notice* ¶ 26 & App. A (proposing to define "Navigable Services" as "[a] multichannel video programmer's video programming and Emergency Alert System messages").

across their own networks. As explained in the DSTAC Report, MVPDs employ different delivery methods such as in-band vs. out-of-band signaling, text crawl with audio override, forced tune, and barker channel.²⁷⁶ Given these differences in technologies, it is not clear how the *Notice*'s proposed EAS delivery mechanism will be implemented across diverse MVPD networks, what will be required to make this happen and at what costs.

Further, while MVPDs are required to provide EAS messages in the Information Flows sent to third-party devices and apps, MVPDs have no way of confirming that those devices and apps are actually delivering those EAS messages to consumers in the same way MVPDs can confirm EAS delivery in their own systems today. For example, if any EAS questions arise today, Comcast can efficiently verify whether EAS messages reached certain devices delivering its service, including through its electronic system logs for many set-top boxes and retail devices running Xfinity apps. Under the Commission's proposal, however, Comcast's verification methods would not work for EAS messages sent via the Information Flows because Comcast would have no insight into how, or even whether, the third-party device or app is presenting the messages to consumers.

In the event that a consumer complains about not receiving an EAS message on such device or app, Comcast's only recourse would be to test each and every third-party device or app individually after the fact for EAS compliance. Given the potential volume, this could render monitoring and enforcement difficult or near impossible to implement in a reasonable, timely, and efficient manner. And if a consumer does not identify a particular device or app in an EAS complaint, there would be no way for Comcast to even identify the devices or apps responsible for the gaps in EAS message delivery. It would be arbitrary and unreasonable to hold MVPDs

²⁷⁶ DSTAC Report at 288.

responsible for device or app failures that have nothing to do with MVPDs. Moreover, without any potential contractual or regulatory liability, the device maker or app provider would not have strong incentives to make sure EAS messages are delivered to consumers.

The group most at risk under this regime would be consumers. What happens, for example, if a consumer using a third-party device or app does not get a warning about a tornado or other life-threatening emergency? As with privacy protections, here again the Commission is creating a problem where none exists today under the existing MVPD distribution model, where EAS messages are delivered on set-top boxes and apps. It is simply not reasonable for the Commission to try to pass off the problem onto MVPDs when they will not have the technical or legal tools to address them.

C. Commercial Limits on Children's Television

The Commission's children's programming rules require MVPDs to limit the amount of advertising included in programming directed to children ages 12 and under and require clear separation between commercials and children's programming.²⁷⁷ These rules are designed to avoid the over-commercialization of children's programming, particularly since, as the Commission observed, young children have trouble distinguishing between commercials and programming.²⁷⁸ But, as discussed above,²⁷⁹ third-party device manufacturers and app developers would be free to overlay their own advertising materials on top of children's programming – either as part of the third party's user interface or on top of the programming itself – thus exceeding the children's commercial time limitations without MVPDs' knowledge

²⁷⁷ See 47 U.S.C. §§ 303a-b; see also 47 C.F.R. §§ 73.670, 76.225.

²⁷⁸ See, e.g., *Children's Television Obligations of Digital Television Broadcasters*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd. 22943 ¶¶ 5-11 (2004).

²⁷⁹ See discussion *supra* Section VII.B.

and without real risk of any repercussions given the problems with the Commission’s self-certification regime detailed above. As result, there is a legitimate concern that the children’s programming rules could easily be ignored and that the Commission’s important policy objectives would be undermined.

D. Accessibility

The Commission’s accessibility rules apply to MVPD-supplied devices and apps. So, for example, Xfinity TV apps support closed captioning (including caption enhancements such as font, color, and the like), video description, and audible emergency information. Although there are parallel requirements for third-party retail devices, these rules would not apply to third-party apps that may be used to access MVPD service, as contemplated in the Commission’s proposal. So while Comcast will have to pass through closed captioning, video description, and emergency information data to a third-party app under the proposal, there is no requirement that the app enable consumers to use that data. The *Notice* is entirely silent on this “app gap” in the proposal.

The Set-Top Box Mandate also would create consumer confusion with respect to accessibility features. MVPD customers can turn to their MVPD when they have an issue with closed captioning or other accessibility features, and the MVPD can troubleshoot the issue and, if necessary, coordinate with programmers or others to fix the problem. In fact, Comcast has dedicated personnel in its Center of Excellence to field calls about accessibility issues.²⁸⁰ As described above,²⁸¹ the Commission’s proposal raises serious customer support and accessibility questions about what will happen when there are problems or failures with third-party devices

²⁸⁰ Acknowledging the importance of dedicated customer support for customers with accessibility issues, the Commission has, in other contexts for example, proposed rules requiring MVPDs to establish dedicated customer service contacts for video description issues. *Video Description: Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010*, Notice of Proposed Rulemaking, FCC 16-37 (Apr. 1, 2016).

²⁸¹ See discussion *supra* Section VI.D.

and apps. And the fact that MVPDs will have no contractual relationship with device makers or app providers means that MVPDs will have no insight into whether or how these entities are delivering accessibility features and no mechanism for addressing consumer complaints. In sum, the proposal will frustrate consumers and lead to situations where customer concerns cannot be resolved promptly or at all.

The proposal also would create a new “liability gap” in the Commission’s enforcement regime for accessibility compliance. The Commission has taken steps to create bright-line rules for compliance. For example, the Commission recently adopted an order making clear that video programming distributors and programmers are responsible for compliance for issues within their respective control (distributors for the pass-through of captions, and programmers for the provisioning and quality of captions).²⁸² These well-defined compliance obligations will be lost under the Commission’s approach. If there is an issue with how an app is handling (or not handling) accessibility features, there will be no regulatory or contractual mechanism for addressing the situation. This would mark a step backwards in the effectiveness of the Commission’s accessibility compliance regime – to the detriment of consumers, and contrary to the Commission’s efforts in this area in recent years.

* * * *

In sum, the Commission’s proposed rules and self-certification regime would have the effect of weakening important consumer protections that consumers have come to expect and rely upon when accessing their MVPD service – protections that are assured today under the app model. The *Notice’s* claims to the contrary are completely unsupported and contrary to marketplace facts.

²⁸² See *Captioning Compliance Order* ¶ 6.

X. THE PROPOSED STANDARDS-SETTING PROCESS IS UNREALISTIC, INFEASIBLE, AND WOULD STIFLE INNOVATION.

The *Notice* claims that its Set-Top Box Mandate does not impose technology mandates on MVPDs because it refers technical aspects of the proposal to standards-setting bodies²⁸³ and gives each MVPD the “flexibility to choose the standard that best aligns with its system architecture.”²⁸⁴ Those claims are simply not true. In fact, the Commission’s proposal includes very specific technical requirements that must be developed, standardized, and implemented by MVPDs. The Commission may try to suggest otherwise, but these are technology mandates. And, as detailed above, far from giving MVPDs “flexibility,” these mandates would force a costly redesign of existing network architectures – costs that ultimately will be borne by consumers, and costs that would not be incurred under the apps-based model.²⁸⁵ The Commission has tried these types of mandates before, with its CableCARD and the 1394 interface rules, and both mandates were clear failures. The Commission’s latest proposal demonstrates once again the inherent risk in adopting a technical solution that will take years to develop and will likely be outdated by the time it reaches the marketplace.

A. The Set-Top Box Mandate Is Dictating to the Standards Bodies the Functional Requirements for Any Standard.

The *Notice* appears to believe that its proposal does not qualify as a technology mandate,²⁸⁶ but that is far from reality. The *Notice* is mandating that MVPDs disaggregate their

²⁸³ *Notice* ¶ 34.

²⁸⁴ *Id.* ¶ 35. However, the text of the actual proposed rule appears to contradict the Commission’s claim of flexibility and would actually require MVPDs to comply with *all* standards adopted by the open standards body. *See id.*, App. A (proposed § 76.1211) (stating that each MVPD would have to make such Information Flows available “in published, transparent *formats that conform to specifications* set by Open Standards Bodies”) (emphasis added).

²⁸⁵ Furthermore, given the complexities involved reaching consensus in the standards-setting process and the accelerated timeframe under which standards must be developed and implemented, it is simply not realistic to assume that multiple standards (from which MVPDs may choose) will emerge.

²⁸⁶ *Id.* ¶ 34.

service into three Information Flows. That the *Notice* is delegating to a standards-setting body the task of adopting implementing standards does not change the fact the *Notice* is imposing a specific technical solution on MVPDs.²⁸⁷ This is contrary to past Commission practice with respect to standards-setting,²⁸⁸ and also contrary to Congress’s directive in Section 629 that the Commission “take cognizance of the current state of the marketplace and consider the results of private standards setting activities.”²⁸⁹ The marketplace is already delivering device options absent government intervention, and MVPDs and other marketplace participants are already embracing standards-based app solutions.²⁹⁰

B. The Proposed Two-Year Deadline To Develop and Implement Brand New Standards Is Infeasible.

The *Notice* contends that standards-setting bodies can develop standards that meet the proposals detailed specifications and, after that standard is developed MVPDs can implement these new standards, make substantial network changes, and develop of new gateway equipment within two years of the effective date of new rules. This proposed deadline is entirely unrealistic.²⁹¹

²⁸⁷ Codifying such a regulation without pointing to the exact standard adopted runs afoul of the rule that federal agencies must identify the specific standards incorporated by reference in its regulations and are prohibited from incorporating dynamic materials. *See* 1 C.F.R. § 51.1(f) (“Incorporation by reference of a publication is limited to the edition of the publication that is approved. Future amendments or revisions of the publication are not included.”); *see also* Emily S. Bremer, *Incorporation by Reference in an Open-Government Age*, 36 Harvard J. of L. & Pub. Pol. 131, 185 (2013) (“Dynamic incorporations may also offend more fundamental legal principles, including nondelegation principles and notice-and-comment requirements.”).

²⁸⁸ *See Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, Fourth Report and Order, 11 FCC Rcd. 17771 ¶¶ 1, 34, 39 (1996). Seeking to “avoid the possibility that we could inhibit development of services which might, in fact, draw consumers more readily to embrace digital broadcasting,” the Commission preserved flexibility for the ATSC standard to accommodate a variety of consumer preferences. *Id.* ¶ 39.

²⁸⁹ H. Rep. No. 104-458, at 181 (1996).

²⁹⁰ *See supra* Section VI for discussion of the costs associated with this mandate.

²⁹¹ It could take almost this long just for MVPDs to develop new equipment required to implement the proposal. As the Commission itself has stated, “[t]he Commission has repeatedly determined, manufacturers generally require approximately two years to design, develop, test, manufacture, and make available for sale new

As a preliminary matter, the proposed two-year deadline is premised on the *Notice*'s erroneous notion that new standards can quickly be developed based on "off-the-shelf" technology.²⁹² But, as explained in the Commission's own DSTAC Report and as other commenters have observed, and as Tony Werner confirms in his declaration, there is no "off-the-shelf" technology upon which the new standards can be quickly developed.²⁹³ The *Notice*'s references to a readily available DLNA "toolkit of specifications" and specifications largely based on VidiPath are technically incorrect and overlook the key fact that VidiPath is an *apps*-based solution. This standard was developed through a collaboration of CE manufacturers, MVPDs, and chip manufacturers, and relies upon an MVPD-supplied app to deliver MVPD service to VidiPath-certified retail devices. VidiPath technology is not designed to support a disaggregation model, and does not support access to MVPD service without the MVPD-supplied app.²⁹⁴ Nor could it be retrofitted to accommodate the *Notice*'s proposal, and certainly not in the extremely short timeframe proposed. In fact, the vast majority of VidiPath APIs are based on HTML5, as is the Xfinity TV Partner Program. VidiPath uses relatively few APIs from the DLNA "toolkit."²⁹⁵

products." *Closed Captioning of Internet Protocol-Delivered Video Programming: Implementation of the Twenty-First Century Communications and Video Accessibility Act of 2010*, Report and Order, 27 FCC Rcd. 787 ¶ 122 (2012) (citing compliance deadlines in various FCC proceedings). And sometimes the Commission has adopted longer compliance deadlines. For example, in the accessibility context, the Commission gave device manufacturers two years to come into compliance with the new closed captioning requirements, *see id.*, and it gave them three years to comply with new requirements under its accessible guide order, *see Accessibility of User Interfaces, and Video Programming Guides and Menus*, Report and Order and Further Notice of Proposed Rulemaking, 28 FCC Rcd. 17330 ¶ 111 (2013).

²⁹² See *Notice* ¶ 34.

²⁹³ Werner Decl. ¶ 19; *see also* DSTAC Report 281-83; Jan. 15 NCTA Ex Parte at 2-5; Letter from Paul Glist, Counsel to NCTA, Davis Wright Tremaine LLP, to Marlene H. Dortch, Secretary, FCC, MB Docket No. 15-64, at 3 (Jan. 13, 2016).

²⁹⁴ Moreover, VidiPath is an in-home based technology that relies on a mediating device, further demonstrating the need for a second box under the Commission's Set-Top Box Mandate.

²⁹⁵ Werner Decl. ¶ 19.

Furthermore, as the *Notice* acknowledges,²⁹⁶ standards-setting is a consensus-driven process, and finalizing a standard typically takes several years to complete. Even after a standard is developed, it is often followed by years of implementation work, including extensive testing and verification of compliance with standards. The Commission’s prior experience with standards is instructive here, and underscores just how unrealistic the *Notice*’s proposed timeframe is.²⁹⁷ It took six years to finalize the CableCARD standard required by the Commission,²⁹⁸ and nine years to finalize the IEEE 1394 standard that the Commission mandated for inclusion on cable operator-supplied set-top boxes.²⁹⁹ In addition, DLNA spent five years developing the VidiPath video streaming guidelines described above,³⁰⁰ and it took a decade to develop the HTML5 standard before it was published by W3C.³⁰¹

Perhaps recognizing how unrealistic a two-year timeframe would be for finalizing and implementing standards, the *Notice* invites comment on adopting a fallback set of technical specifications that would be imposed by the Commission.³⁰² This concept is inherently flawed because it discourages cooperation. For example, to the extent the Commission adopts “fallback” standards based on the suggestions from the proponents of new regulations, those

²⁹⁶ Indeed, the Commission’s defines “open standards body” as one that, among other things “strives to set consensus standards.” *Notice* ¶ 41.

²⁹⁷ See Besen Decl. ¶¶ 29-35.

²⁹⁸ See, e.g., *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Second Report and Order and Second Further Notice of Proposed Rulemaking, 18 FCC Rcd. 20885 ¶ 2 (2003).

²⁹⁹ See, e.g., *id.* ¶ 24.

³⁰⁰ See, e.g., Press Release, Digital Living Network Alliance, DLNA Launches VidiPath Certification Program for Retail Products Supporting Subscription TV (Sept. 14, 2014), <http://www.dlna.org/news/news/2014/09/11/vidipath-certification-program-launch-announcement>.

³⁰¹ See, e.g., W3C, HTML5, W3C Recommendation 28 October 2014, <https://www.w3.org/TR/html5/introduction.html>.

³⁰² See *Notice* ¶ 43.

parties would not have an incentive to come to the table in the standards-setting process since their favored specifications would automatically become effective after the two-year timeframe.³⁰³ That would hardly qualify as an open and consensus-driven process, and further highlights the arbitrary and unsupportable nature of the proposed Set-Top Box Mandate.³⁰⁴

C. The Commission Has A Poor Track Record With Technology Mandates, Which Have Often Impeded Innovation.

The Commission's proposal would be the very type of government-imposed technology mandate that has, time and again, proven ineffective and costly to consumers in the fast-changing video marketplace.³⁰⁵ The retail market for CableCARD-enabled devices never materialized as the Commission predicted, despite the cable industry's longstanding and ongoing support for CableCARDS. As Comcast has detailed previously, it has been strongly committed to supporting CableCARD devices, and has gone above and beyond the Commission's CableCARD requirements by, among other things, supporting VOD on TiVo devices, offering customers an option to direct ship CableCARDS for self-installation, and providing a single support line for all CableCARD activation, support, and billing questions.³⁰⁶ Notwithstanding this support, only 621,000 CableCARDS are used in retail devices today (in contrast to the more than 55 million used in operator-supplied set-top boxes and to the over 460 million retail devices that support MVPD

³⁰³ Moreover, NCTA has already explained the technical shortcomings of this proposal and why it would not work as advertised. *See* Jan. 15 NCTA Ex parte at 2-3; NCTA Reply Comments at 25-36.

³⁰⁴ The Commission's proposal also fails to require that any open standards body is accredited by the American National Standards Institute ("ANSI") to ensure that well-established consensus procedures are followed or to require that any standards adopted must be approved by ANSI as an additional safeguard that the standard was developed consistent with ANSI's process.

³⁰⁵ *See* Besen Decl. ¶¶ 29-35.

³⁰⁶ *See* Comcast Comments, MB Docket No. 15-64, at 11-14 (Oct. 8, 2015).

apps).³⁰⁷ Meanwhile, the CableCARD requirements for operator-supplied boxes resulted in well over \$1 billion in completely unnecessary costs for cable operators and their customers.³⁰⁸ Moreover, as detailed above, consumers are demonstrating a growing preference for accessing MVPD service using apps on smartphones, tablets, smart TVs, and other IP-enabled devices.

Other technology mandates have likewise proved to be unnecessary – and costly – failures. For example, the mandated inclusion of IEEE 1394 outputs on cable boxes went on for years even after HDMI prevailed in the marketplace (with the Commission waiting nearly a decade before finally permitting cable operators to use an alternative).³⁰⁹

In the *Notice*, the Commission appears to acknowledge the dangers of “rigid, government-imposed technical standards,”³¹⁰ yet ignores the similarities between its current proposal and prior failed technology mandates. Indeed, when the Commission imposed rules that eventually led to the CableCARD, it also believed it was creating a “loose and flexible requirement.”³¹¹ But, as shown, such forced standardization proved to lack the flexibility needed to respond to the rapid changes in the marketplace and technology, resulting in increased (and often unnecessary) costs to consumers and, critically, at further expense to innovation itself.³¹²

³⁰⁷ See Letter from Neal M. Goldberg, Vice President & General Counsel, National Cable & Telecommunications Association, to Marlene H. Dortch, Secretary, FCC, CS Docket No. 97-80, at 1 (Jan. 29, 2016).

³⁰⁸ See NCTA, *Now Is the Time for Congress To Eliminate the Integration Ban* (Mar. 31, 2014), <https://www.ncta.com/platform/public-policy/now-is-the-time-for-congress-to-eliminate-the-integration-ban/>.

³⁰⁹ See *Implementation of Section 304 of the Telecommunications Act of 1996; Commercial Availability of Navigation Devices*, Third Report and Order and Order on Reconsideration, 25 FCC Rcd. 14657 ¶ 43 (2010) (“We conclude that the best step we can take . . . is to modify our interface rule to require cable operators to include an IP-based interface . . . without specifying a physical interface.”).

³¹⁰ *Notice* ¶ 34.

³¹¹ *Navigation Device Order* ¶¶ 70-72.

³¹² The Commission has previously acknowledged that imposing technology mandates “is perilous because regulations have the potential to stifle growth, innovation, and technical developments at a time when consumer demands, business plans, and technologies remain unknown, unformed or incomplete,” and warned of the dangers of “fixing into law the current state of technology.” *Navigation Device Order* ¶¶ 15-16.

Dr. Besen explains that a review of past Commission standards efforts (e.g., standards for AM stereo, color-sequential color TV, and program scrambling) leads to the conclusions that mistakes in government-driven standards setting often cannot be avoided, particularly in highly dynamic industries like this one where the marketplace and technology are constantly changing; that the government is often no wiser than industry participants in setting standards; and that the best course of action is often for the Commission to allow industry participants to develop standards without government interference, especially where, as here, there is already an ongoing industry effort to achieve the Commission's claimed objective and satisfy Section 629's statutory directive.³¹³

XI. CONCLUSION

The Commission's Set-Top Box Mandate exceeds the Commission's authority under Section 629 and would cause irreparable harm to numerous players in today's dynamic video and device marketplace. In weighing the significant costs and the Commission's intended goals, an objective analysis of the options available to the Commission leads to only one rational conclusion: The apps-based approach is the clear path forward and, unlike the Set-Top Box Mandate, complies with Section 629 and with Congress's intent. And apps achieve this while avoiding the costly heavy-handed regulation, technical mandates, fatal legal infirmities, and risks to innovation, programming, and consumer protections inherent in the Commission's proposal. Comcast urges the Commission to follow this apps-based approach to ensure that MVPDs, programmers, and device manufacturers continue to enjoy the opportunities to innovate that apps provide, and that consumers enjoy the continued benefits of this apps-driven innovation.

³¹³ See Besen Decl. ¶ 35.

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April 22, 2016

APPENDIX A

DECLARATION OF TONY G. WERNER

1. My name is Tony G. Werner. My business address is One Comcast Center, 1701 JFK Boulevard, Philadelphia, PA 19103. The statements herein are based on my personal knowledge, including information I have obtained during my employment at Comcast.

2. I am Executive Vice President and Chief Technology Officer for Comcast Cable. In this role, I am responsible for the company's technology strategy and evolving network architecture, including support for next-generation consumer systems and technologies, infrastructure and engineering, network integration and management tools, and technical standards. I have worked for Comcast since 2006, overseeing major platform investments such as DOCSIS 3.0 and the all-digital transition, as well as the rollout of Comcast's X1 cloud-enabled platform. I have more than 25 years of engineering and technical management experience, and also have held senior management positions with Liberty Global, Inc.; Qwest Communications; Aurora Networks; TeleCommunications, Inc. (TCI)/AT&T Broadband; Rogers Communications, Inc.; and RCA Cablevision Systems.

3. As one of the leading architects of Comcast's current cable network and services, and having worked with and designed and deployed numerous other cable networks and services on behalf of many other cable operators, I submit this declaration in order to provide my expert analysis of the set-top box proposals put forth by the Commission in its *Notice of Proposed Rulemaking* ("Notice"). In particular, I will address Comcast's current strategy for offering its cable services on retail devices, and the significant advantages associated with that strategy. In addition, I will detail the extensive technological impediments, burdens, and costs that in my view would be associated with implementing the Commission's proposed disaggregation of cable operators' services. Finally, I will explain the risks to piracy and theft of service that the

Commission's proposals present, as well as its chilling effect on product innovation in the video business recently enabled by apps generally, and HTML5 specifically.

Advantages of Apps

4. To date, Comcast has deployed its Xfinity TV apps on iOS devices like iPhones, iPads, and later generation iPods; Android phones and tablets; and PCs and Macs. Through these apps, Comcast ensures that cable service is delivered in compliance with Title VI regulatory requirements, including privacy protections for customers' viewing history and other personally identifiable information, channel placement of broadcast stations, delivery of Emergency Alert System ("EAS") messages, compliance with commercial time limits for children's programming, as well as closed captioning, video description, and other applicable accessibility requirements. These apps also enable Comcast to ensure full implementation of the contractual requirements in its agreements with programmers, including requirements relating to content security, geographic restrictions, copy restrictions, and the display, placement, monetization, and branding of content.

5. Our apps also facilitate rapid innovation and serve important network management functions. Comcast can quickly deploy new services and feature upgrades to its cable service through automatic app updates as the service evolves, without the need for new equipment or a tech visit. Xfinity TV apps also communicate with Comcast's network backend, allowing Comcast to manage the efficient delivery of new video services to customers. Comcast frequently updates its apps to adapt to new and changing backend services. As a result, Comcast can capitalize on the latest technological advances and deploy them to customers in a more accelerated and cost efficient manner.

6. Comcast recently launched its Xfinity TV Partner Program to deploy a standards-based app that will expand the range of retail devices our customers can use to access their

Xfinity TV cable service, including live, on demand, and cloud DVR programming. By leveraging the open HTML5 standard that has been widely adopted across the industry, the Xfinity TV Partner Program provides a common framework to which smart TV, TV-connected, and IP-enabled retail device manufacturers can build to make the Xfinity TV Partner app available on their devices without the need to lease a set-top box. Samsung, one of the world's largest smart TV manufacturers, is the first to join the program. And Comcast is open to working with device manufacturers that do not support HTML5 to explore customized versions of the Xfinity TV Partner app for their platforms as well. Comcast has already developed app experiences for iOS and Android devices, and recently announced an agreement with Roku. This customized app will enable Comcast customers to access their Xfinity TV cable service on their TVs via a Roku streaming player or directly on a Roku TV without the need to lease a set-top box.

Substantial Costs and Burdens of the Commission's Proposal

7. The Commission's set-top box proposals would force Comcast, and likely other MVPDs, to make substantial and costly network changes and would require the deployment of additional in-home equipment. Such costs would divert resources away from innovation and investment in new features and services with proven demand, and ultimately would be borne by consumers.

8. Comcast does not deliver video today using the three standardized "Information Flows" described in the *Notice*. Consequently, Comcast would need to re-architect its network to deliver video over the three Information Flows. It is difficult to know exactly what Comcast would be required to do to implement the proposal since the Commission's proposal is merely theoretical and relevant standards have not yet been developed, but based on my decades of

experience in architecting and deploying networks, I can testify that the level of work will be substantial, complex, and very costly.

9. “Entitlement Data” provides a good example of the type of costly changes that Comcast, and likely other MVPDs, would have to make. Under the proposal, Comcast would now have to deliver that data using open standards. Comcast’s current network – which was obviously designed before this idea or any accompanying technical standards were even conceived, much less implemented – would not be able to support the new standards, so Comcast would have to make significant changes to its entitlement servers and other parts of the network in order to implement the standards. Furthermore, Comcast would have to ensure that the entitlements (which contain sensitive personal information about what content individual customers can receive) are delivered in a way that does not violate Comcast’s privacy obligations to consumers.

10. In addition, Comcast would have to dedicate more network bandwidth to delivering the Information Flows to third-party devices and apps. Comcast, like other cable operators, delivers IP cable service to its apps today as an integrated, unified service on a cloud-to-ground, unicast basis. In contrast to the traditional cable distribution method, where all linear channels are broadcast over the network to customers’ homes, a unicast model distributes content on a one-to-one basis to each customer requesting that specific piece of content.

11. Comcast has longer-term plans to migrate to a multicast delivery model, where IP streams can be sent to multiple users of particular content at the same time, which will result in more efficient use of network resources. However, under the two-year timeframe contemplated in the Commission’s proposal (which, by the way, in my experience, is far too short a period of time necessary to adopt an open standard at the level of complexity involved here), Comcast

would have to deliver the mandated Information Flows on a unicast basis to third-party devices and apps, which lack the tools (and, for that matter, the incentive) that Comcast has to integrate into its own apps to manage bandwidth impacts. The number of potential devices and apps that will be accessing MVPD service is unknowable at this point, but is potentially quite large, and it is uncertain whether Comcast or other MVPDs will have the capability to accommodate all of the unicast streams (and associated entitlements and metadata).

12. Any bandwidth that must be dedicated to serving these devices and apps will mean less bandwidth for Internet and other services and innovations with proven consumer demand, and will complicate Comcast's ongoing IP transition plans, which are still in their early stages. Comcast's goal is to proceed with its transition to all-IP cable service on an incremental basis to limit impacts on customers of legacy QAM-based cable service, but those plans will be disrupted if Comcast is forced to allocate more bandwidth to comply with the Commission's proposal in a two-year timeframe.

13. Cable systems today operate on a two-way, interactive basis, under which operator-supplied devices and apps are constantly communicating with the network and play a critical role in managing the delivery of cable service to the home. Comcast's set-top boxes and Xfinity TV apps include software code that manages requests for programming and communications between the box/app and where the programming is cached on the network to ensure the programming is delivered, and done so efficiently. In addition, this software code minimizes the risks of degradation to the service due to bandwidth shortages and congestion, and also enables Comcast to support rapidly evolving entertainment technologies, such as accessibility features and advanced video technologies.

14. These types of apps-based network management tools would be lost under the proposal, which would require delivery of standardized Information Flows to an unknown number and variety of third-party devices and apps. Those devices and apps are not designed to work and communicate with Comcast's network and cache servers. Nor do those devices and apps have any incentive to make network requests for entitlements, metadata, and video streams on an efficient basis, so without some other way to mediate those requests, such requests could overwhelm Comcast's network, resulting in service disruptions and network outages. Also, currently only authorized and tested code is allowed to access the Comcast video network. CableCARD retail devices, for example, make no calls into the cable network – only the tested and certified CableCARD itself can access the video network directly. Considerable time and expense would be required to harden the video network for security since third-party device software can be updated at any time, introducing intentional or inadvertent security threats not possible in today's video networks.

15. Thus, for Comcast, and likely other MVPDs, I believe the only practical alternative to avoid these network harms, beyond the application model widely embraced in the marketplace, would be to deploy a new in-home gateway device that could manage the interaction of third-party devices and apps with the network and protect the network from security breaches. This gateway would mediate requests for entitlements, metadata, and video under the proposal and communicate with Comcast's cache servers in order to ensure that the programming is delivered, and done so efficiently, while minimizing the risks to the network (e.g., requests for entitlements would be sent to the gateway, and the gateway would then communicate with the network and manage the actual delivery of the content, something the app itself normally would do).

16. Comcast and other MVPDs would also need such a new in-home device to avoid locking in certain technologies in the network. Under the Commission’s proposal, operators would have to use specific technology formats for delivering the standardized Information Flows to third-party devices and apps. Without an in-home gateway device, those technology formats would be frozen in the network, making it difficult (if not impossible) to accommodate network changes over time. An in-home device would mitigate that risk by allowing each operator to continue to innovate in the network while using the device to convert the Information Flows to the required formats before sending the flows onto third-party devices and apps.

17. Such a gateway device does not exist today, so Comcast and other MVPDs would have to incur costs to develop a new device that could implement the standardized Information Flows as described above. In addition to requiring subscribers to obtain a new piece of equipment (which is contrary to a key Commission goal in this proceeding), such a gateway device would also have the effect of significantly increasing consumer energy consumption and energy cost, undermining the progress the industry has made in this area.

18. The *Notice*’s “parity” requirements would erect barriers to innovation by subjecting changes in MVPD service to standards-setting and regulatory delays. This could essentially freeze development and implementation of new technologies by preventing Comcast and other MVPDs from launching new content or services, or existing content in a new resolution or format, on their own apps and devices unless and until they have also ensured that third parties can receive these same products and services.

19. To the extent that the Commission-mandated standards can no longer support next-generation services and features, MVPDs would need to seek revisions of the standards before they could even implement these new services and features for their devices or apps or

third-party devices/apps. This requirement could also have the effect of “freezing” MVPD networks until a new standard could be developed to work with the latest network technologies. Such a process would take substantial time and could be subject to “hold-up” from parties who may resist changes, further slowing innovation. Moreover, to propose a change in the standards, MVPDs would have to disclose confidential business strategies and offerings, to the benefit of competitors not subject to the same restrictions.

20. The *Notice* suggests that standards-setting bodies can develop open standards that meet the proposal’s detailed specifications and, after those standards are developed, that MVPDs can implement them, make substantial network changes, and develop new gateway equipment within two years of the effective date of new rules. That deadline is unrealistic, as there is *no* “off-the-shelf” technology upon which the new standards can be quickly developed. Let me be very clear on this point, as it is essential to why the Commission’s proposal is unworkable: The *Notice*’s references to a readily-available DLNA “toolkit of specifications” and specifications largely based on VidiPath are technically incorrect and overlook the key fact that VidiPath is an *apps-based* solution that relies upon an MVPD-supplied app to deliver MVPD service to VidiPath-certified retail devices. VidiPath technology is *not* designed to support a disaggregation model as proposed in the *Notice* and does not support access to MVPD service without an MVPD-supplied app. Nor could it be retrofitted to accommodate the *Notice*’s proposal, and certainly not in the extremely short timeframe proposed. In fact, the vast majority of VidiPath APIs are based on HTML5, as is the Xfinity TV Partner Program. VidiPath uses relatively few APIs from the DLNA “toolkit.”

Risks to Content Security

21. The proposal would also severely undermine MVPDs' content security and facilitate theft of MVPD services and programmers' content. The proposal would require MVPDs to support at least one content protection system that would be licensed to third-party device manufacturers and app developers only on reasonable and non-discriminatory ("RAND") terms, and would involve a Trust Authority that is not substantially controlled by any MVPD. This scheme would substantially limit the security options available to MVPDs, remove key mechanisms for ensuring secure delivery of content, and could very well require that MVPDs implement security options that may not sufficiently protect content against theft and piracy.

22. Requiring that MVPDs support a security system that is available on RAND terms effectively limits the range of security solutions upon which MVPDs can rely. This approach potentially forecloses digital rights management ("DRM") and other options that may do a superior job of securing video and meeting the demands of programmers, but are not licensed on RAND terms.

23. DRM and other content protection methods are just one part of the "chain of trust" that MVPDs employ to ensure adequate content protection and compliance with their contractual obligations to programmers. With apps, MVPDs can monitor and detect potentially fraudulent and/or abusive viewing patterns such as unauthorized credential sharing and abnormal VOD transaction history tied to a particular account and also ensure that programmer usage rules (e.g., restrictions on the number of registered devices/concurrent streams per user account) are honored. MVPDs also rely on their own user interfaces and apps to implement other security configurations that programmers require, such as geographic restrictions for content; secure boot (i.e., an authorized device verification mechanism); "signed code" that matches a security


certificate and other software tamper-resistance mechanisms; content watermarking, which helps track the source of pirated content, and other security requirements specific to VOD; additional device output controls and copy restrictions; and security requirements for HD video (and, in the near future, higher security requirements for Ultra HD video). The *Notice's* disaggregation mandate, however, would strip MVPDs of the various other tools they use to create a trusted environment for content and create wide security gaps that are not addressed by DRMs and other content security systems. This would necessarily result in significant risks to theft of service and piracy of content once that service was stolen.

24. Forcing MVPDs to rely on an independent Trust Authority to issue security certificates and encryption keys to third-party devices and apps is inconsistent with current security practices and leaves content more vulnerable to piracy by forcing MVPDs to hand over keys to all of their content to a third party. The proposal also fails to address device authentication. As part of issuing its own certificates and keys, Comcast also ensures accurate device and user/account authentication through its apps, which is generally required by programmers and necessary to implement other security functions and configurations to protect content. Eliminating MVPD involvement from this critical task would further jeopardize today's secure content environment.

25. The Commission's proposal would prevent MVPDs from conducting testing and certification to ensure that third-party devices and apps do not cause harm to the network or facilitate service theft. Comcast has a strong interest in ensuring that any devices that want to attach to its network and access its cable service do not create network or service harms. Testing and certification are essential to protecting the network and guarding against service theft. Comcast, for example, operates a testing and certification program for cable modems, which has

resulted in approval of over 50 retail modems from a wide variety of manufacturers. If Comcast is barred from playing a similar role in testing and certification for other categories of navigation devices, content security and overall network security will be weakened further.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 21st
day of April, 2016.

A handwritten signature in cursive script, appearing to read "Tony G. Werner / nK", written over a horizontal line.

Tony G. Werner
Executive Vice President and Chief Technology Officer
Comcast Cable

APPENDIX B

Declaration of Dr. Stanley M. Besen

An Economic Analysis of the Commission's Set-Top Box Mandate

1. My name is Stanley M. Besen. I have published widely on telecommunications economics and policy, intellectual property, and the economics of standards and have served as an expert consultant to many companies in the telecommunications and information industries. I have also served as a Brookings Economic Policy Fellow, Office of Telecommunications Policy, Executive Office of the President (1971-72); Co-Director, Network Inquiry Special Staff, Federal Communications Commission (1978-80); Coeditor, RAND Journal of Economics (1985-88); Senior Economist, RAND Corporation (1980-92); member of the Editorial Board of Information Economics and Policy (1992-2004); and Vice President, Charles River Associates (1992-2008). I currently serve as a member of the Editorial Board of Economics of Innovation and New Technology and as a member of the ICANN Competition, Consumer Trust and Consumer Choice Review Team. I have taught at Rice University (1965-1980), where I was the Allyn R. and Gladys M. Cline Professor of Economics and Finance; Columbia University (1988-1989), where I was the Visiting Henley Professor of Law and Business; and the Georgetown University Law Center (1990-1991), where I was Visiting Professor of Law and Economics. I hold a Ph.D. in Economics from Yale University (1964). My CV is included as Attachment A to this Declaration.

2. Comcast has asked me to conduct an economic analysis of the Federal Communications Commission's recent proposal that would, among other things, "require multichannel video programming distributors ('MVPDs') to offer three flows of information using any published, transparent format that conforms to specifications set by open standards bodies [to] allow manufacturers, retailers, and other companies that are not affiliated with an MVPD to design and

build competitive navigation devices.”¹ The Commission’s stated goal is “to assure a commercial market for devices that can access multichannel video programming and other services offered over multichannel video programming systems.”² At the same time, however, the Commission has indicated that it intends, under its proposal, “to preserve the contractual arrangements between programmers and MVPDs.”³

3. I reach five major conclusions regarding the Commission’s proposal. *First*, the Commission’s proposal incorrectly perceives the relationship between MVPDs and device manufacturers as necessarily adversarial. In fact, consumer devices are *complements* to the services that MVPDs offer, so that improvements in devices that lead to increases in the demand for these services benefit MVPDs. Evidence for the proposition that MVPDs have incentives to deliver their services to a variety of retail devices so long as that leads to an improvement in service quality is the fact that the industry has embraced an apps-based model that has allowed consumers to access MVPD services on hundreds of millions of retail devices. This approach has been popular among consumers, and MVPDs are investing in additional ways to extend their apps to more retail devices – a process that is likely to be expedited as apps based on the open and widely available HTML5 standard, adopted by W3C, are developed and deployed. Indeed, the industry is coalescing around the HTML5 standard with premium video extensions as evidenced by the creation of the Web Application Video Ecosystem (“WAVE”) – formerly

¹ Federal Communications Commission, Notice of Proposed Rulemaking and Memorandum Opinion and Order, In the Matter of Expanding Consumers’ Video Navigation Choices, Commercial Availability of Navigation Devices (hereafter “Notice”), MB Docket No. 16-42, CS Docket No. 97-80, Adopted: February 18, 2016, Released: February 18, 2016, ¶ 2.

² Notice, ¶ 1.

³ Ibid. ¶ 17.

known as the Global Internet Video Ecosystem (“GIVE”). This initiative, which includes leading electronics manufacturers, content companies, and application developers, will further accelerate efforts to extend the apps-based approach to a wider range of consumer-owned devices, including TVs. Comcast’s recently announced partnerships to develop Xfinity TV apps for Samsung (as part of the Xfinity TV Partner Program, which relies on an HTML5-based app), and for Roku are examples of this trend.

4. *Second*, although the Commission has indicated that its proposal is intended “to preserve the contractual arrangements between programmers and MVPDs,” it is the virtually unanimous view of programmers that the proposal would fundamentally alter these arrangements, reduce programmer revenues, and ultimately adversely affect their incentives to create programming. Specifically, programmers have indicated that, among the contractual arrangements that would be threatened by the proposal, are those involving channel positions, channel line-ups, disaggregation of content, brand protection, and advertising. Thus, rather than preserving the contractual arrangements between programmers and MVPDs, the Commission’s proposal would significantly undermine those arrangements and, as a result, it is likely to affect adversely the incentives of content creators to produce programs.

5. *Third*, under the Commission’s proposal, device manufacturers would have incentives to *reduce* the quality of the viewing experiences of MVPD subscribers if their own profits were thereby increased, and they would have incentives to do so even if their gains were smaller than the losses experienced by MVPDs and programmers. This could occur precisely because the Commission’s proposal would eliminate any contractual nexus between MVPDs and third-party manufacturers and app developers. Thus, although MVPDs would benefit from improvements in, or reductions in the prices of, devices sold by third parties because that would increase the

value of the services that they provide, MVPDs and their subscribers would be harmed by actions of third parties that reduced the value of their services.

6. *Fourth*, the Commission’s proposal significantly understates the difficulties that would be faced by the standards process that it requires. A review of past FCC standards efforts leads to the conclusions (a) that mistakes in setting standards cannot be completely avoided, (b) that the government is often no wiser than industry participants in setting standards, and (c) that the best course of action is often for the Commission to allow industry participants to develop standards without government interference or mandates, especially where, as here, there is already an ongoing market-based effort to address the issue that the Commission claims is its objective. Indeed, the Commission’s proposal could actually delay or prevent achieving its goal because it would displace these developments with an entirely new process that would be difficult and time consuming to complete and for which success is far from certain.

7. *Finally*, in addition to reducing the revenues of programmers, and thus their incentives to create programs, the Commission’s proposal would impose significant costs on MVPDs, costs that would be avoided if ongoing marketplace developments that involve the employment of apps were permitted to proceed. MVPDs would incur significant costs in complying with the Commission’s proposed “three flows of information” requirement. In addition to incurring “one-time” development costs, MVPDs would experience substantial ongoing network and customer support costs if a large number of their subscribers were to opt for alternatives other than set-top boxes or apps-based services. These costs would ultimately be borne by MVPD subscribers.

8. Before proceeding to address these issues, however, it is important to highlight the significant disconnect between the stated goal of the Commission – to provide consumers with competitive alternatives to MVPD-supplied set-top boxes (e.g., smart TVs, streaming devices) –

and the approach actually proposed in the Notice, which would allow third-party suppliers of equipment that consumers may employ as alternatives to alter fundamentally the program services that these consumers receive. The FCC’s proposal goes far beyond what is needed to achieve its stated goal. In short, the “tool” that the Commission has chosen is not well suited to its stated “goal,” and the Commission has failed to respect the admonition, variously stated as: (1) “Don’t use a sledgehammer to crack a nut” (British); (2) “Don’t use a cannon to shoot a sparrow” (Russian); or (3) “Don’t chop a chicken using the blade for a cow” (Chinese). The Commission also appears not to have fully taken to heart the direction of Congress, which noted, in implementing Section 629, that “the Commission should take cognizance of the current state of the marketplace” before adopting its rules.⁴

MVPDs Have Strong Incentives to Deliver Their Services to a Variety of Retail Devices

9. It is a fundamental proposition in economics that the demand for a product, in this case video service, is increased if there is an improvement in the quality, or a reduction in the price, of a complementary input, in this case the devices used by subscribers to access these services. For that reason, MVPDs have strong incentives to support, not retard, the introduction of third-party devices that either can be provided at a lower cost than their own, or enhance the viewing experience of their subscribers, or both. Indeed, as John Gale and I have explained elsewhere, MVPDs have even stronger incentives than do third-party suppliers to make high-quality and low-cost devices available to their subscribers “. . . because their subscribers will then use these [devices] to purchase services that are also sold by the operator. Consumer electronics equipment manufacturers . . . do not have these incentives because their revenues flow entirely

⁴ Cited in Notice, footnote 67.

from equipment sales, and they obtain no revenues from the sale of services.”⁵ Although some device manufacturers now do obtain revenues from the sale of add-on services, the fact remains that they do not have the same incentives as do MVPDs because they generally do not share in MVPD revenues and, as I explain below, they would be indifferent to any reductions in MVPD and programmer revenues that their behavior may engender so long as that behavior increases their own profits.

10. The success of the apps-based approach in enabling MVPD subscribers to view programming on a wide range of retail devices provides clear marketplace evidence of the incentives of MVPDs at work. Apps have been widely deployed by Comcast and other MVPDs on a variety of consumer devices that are provided by third parties. The availability of apps on these devices, which include tablets, mobile devices, smart TVs, video game players, and other TV-connected devices, permits consumers to access the MVPD programming to which they have subscribed without an MVPD-supplied set-top box and permits device manufacturers to innovate in providing products to their purchasers. In August 2015, the DSTAC Working Group 4 observed that:

- “All of the major MVPDs support an iOS and Android App to access their service on smart phones and tablets.
- All of the major MVPDs support their service on Microsoft Windows and Apple Mac OS X either through an application or a Web app (using a plug-in model for content protection today and transitioning to an HTML5 EME Web App in the future).

⁵ S.M. Besen and J.M. Gale, “An Economic Analysis of the Commercial Availability of ‘Navigation Devices’ Used in Multichannel Video Programming Systems,” To the Federal Communications Commission on behalf of General Instrument Corporation, May 16, 1997. *In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996, Commercial Availability of Navigation Devices*, CS Docket No. 97-80, p. 31, footnote omitted.

- Some of the major MVPDs support Smart TVs (LG, Samsung, Sony, Toshiba), game consoles (PlayStation 3 & 4, Xbox 360 & One), and media adaptors (Roku).”⁶

11. Working Group 4 reported that MVPD apps are available on over 460 million retail devices and that apps for all of the top 10 MVPDs are available on about two-thirds of these devices. In addition to its own apps, Comcast also authenticates more than 90 programmer apps across 18 different platforms.⁷ These developments clearly demonstrate that MVPDs have strong incentives to support the introduction of competitively-supplied consumer devices so long as those devices improve the viewing experiences of their subscribers.

12. The availability of MVPD apps on these devices has been facilitated both by their widespread adoption and by the fact that MVPDs were able to develop apps for a limited number of operating systems on these devices. Specifically, approximately two-thirds of retail devices employ the iOS, Mac, or Android operating systems. Not surprisingly, as the Report of Working Group 4 to DSTAC noted, “MVPDs have focused their app development efforts thus far on those devices and platforms that enjoy the greatest consumer use and marketplace success.”⁸ This contrasts with the development of apps for smart TVs and similar devices, where operating systems are far more fragmented. As a result, an MVPD has been required to develop a separate app for each developer, and perhaps for each generation of a developer’s devices, something that is expensive and uneconomic, especially for devices with relatively limited numbers of users. As a result, it is not at all surprising that the widespread use of apps on devices such as smart TVs

⁶ Report of Working Group 4, DSTAC Report (hereafter “Compiled DSTAC Report”), August 4, 2015, p. 206.

⁷ M. Strauss, HBO GO, SHOWTIME ANYTIME Now Available for Xfinity TV Customers on Amazon Fire TV Devices, May 20, 2015, <http://corporate.comcast.com/comcast-voices/hbo-go-showtime-anytime-now-available-for-xfinity-tv-customers-on-amazon-fire-tv-devices>.

⁸ Compiled DSTAC Report, p. 207.

has not developed as rapidly as some have hoped. Despite this, it is notable that Comcast and other MVPDs have successfully concluded negotiations that permit subscribers to view some programming on these devices. In 2014, Comcast announced a 4K Ultra HD video-on-demand programming app for 2014 Samsung UHD TVs.⁹ Time Warner Cable also reported that its TWC TV app is available on Roku devices, Xbox 360 and Xbox One, and Samsung smart TVs,¹⁰ and DirecTV makes its app available on Samsung, Sony, and LG smart TVs.¹¹

13. As further evidence of the incentives of MVPDs to satisfy consumer demand for a wider range of retail device options, Comcast and other MVPDs are pursuing additional apps-based initiatives, including through the development of apps that implement common, open-standards-based HTML5 technologies with premium video extensions. Evidence that the industry, including MVPDs, programmers, device manufacturers, and applications developers, is coalescing around this approach is the recent formation of the WAVE project by the Consumer Technology Association (“CTA”) to promote the use of HTML5 across the video ecosystem.¹²

⁹ M. Strauss, Ultra HD TV Comes Into Focus with Xfinity in UHD App, December 18, 2014, <http://corporate.comcast.com/news-information/news-feed/comcast-launches-xfinity-in-uhd-featuring-full-current-seasons-of-hit-series-on-demand-in-4k-ultra-high-definition> (“Debuting with full current seasons of TV shows from NBC and USA Network, the Xfinity in UHD app library will continue to expand with On Demand programming across multiple networks and studios and is completely free to Xfinity TV customers whose video subscription includes participating networks.”).

¹⁰ Time Warner Cable, TV FAQs, On what devices can I access TWC TV® app?, <http://www.timewarnercable.com/en/support/faqs/faqs-tv/twctvapp/what-devices-can-i-access.html>.

¹¹ DirecTV, What is a DirecTV Ready TV and How Does it Work?, https://support.directv.com/app/answers/detail/a_id/3992/~/what-is-a-directv-ready-tv-and-how-does-it-work%3F.

¹² Founding members of WAVE include Adobe, Akamai, LG Electronics, Samsung, Sky, Sony, Starz, and WWE. Thus, the project already has an important feature that the Commission would require of the body that it would have establish the standard that it is proposing, namely that its members include consumer electronics manufacturers and applications developers in addition to MVPDs, and content companies. See Notice, ¶ 41.

As CTA explains, the goal of the project is “to improve the handling of Internet-delivered commercial video on consumer electronics devices and reduce the difficulty faced by content creators in distributing video to CE devices At the core of this effort is HTML5 and the evolution of video on the consumer device.”¹³ Industry participants in the project have expressed optimism about achieving this goal.¹⁴

14. The coalescing of the industry around the HTML5 standard can be used to harness the benefits of a common technology to facilitate the availability of MVPD apps on more devices, like smart TVs, without the need to customize the app for each individual platform.¹⁵ Moreover,

¹³ GIVE, Open Meeting of the Technical Working Group Teleconference, <https://standards.cta.tech/kwspub/give/>.

¹⁴ Consumer Technology Association, Internet Video Leaders Announce Interoperability Effort, December 22, 2015, <https://www.cta.tech/News/News-Releases/Press-Releases/2015-Press-Releases/Internet-Video-Leaders-Announce-Interoperability-E.aspx> (Dr. Nandhu Nandkahmur, Senior Vice President, LG Technology Center of America: “Seamless implementation of HTML5 will further enhance consumer’s smart TV experience, and the GIVE Project will play a critical role in facilitating the necessary inter- and intra-industry collaborations.”; Kelash Kumar, Director of Project Management, Video Solutions, Adobe: “We actively support the development of industry standards like HTML5 and believe the GIVE project will move the industry forward when it comes to OTT streaming video interoperability across platforms.”; Will Law, Chief Architect, Media Cloud Engineering, Akamai Technologies “. . . the interoperability challenge around OTT players . . . represents a major cost and quality problem for our customers. . . . The GIVE project is a way for the OTT industry to address this fragmentation and to establish a consistent, pervasive and high-quality platform for the secure playout of adaptive content.”; Ben Forman, Principal Streaming Architect, Sky: “Sky’s aim is to provide customers with a world class streaming experience over OTT across all our territories and across all our customers’ devices and products. . . . We believe that to provide customers with this high quality experience consistently, collaboration between industry leaders globally is paramount and the GIVE commitment interoperability is the best way to achieve this.”).

¹⁵ The success of the Reference Design Kit (“RDK”) approach, which focused primarily on the market in which cable operators purchase set-top boxes for lease to their subscribers, provides evidence of the benefits of allowing instructions to devices to be developed independently of the particular characteristics of those devices and thus to permit manufacturers to innovate in the design of their products. David Elder, senior vice president and general manager of Touchtone CPE at Arris noted that “RDK is essentially an app There’s nothing fundamentally baked into the chip.” According to a 2013 trade press report: “Momentum behind RDK has grown to where all the major set-top chip suppliers and leading set-top OEMs in the cable space have

the standard could also serve to start a “bandwagon” in which manufacturers choose to produce devices that are “HTML5 compatible” because they believe that others will also do so.¹⁶

15. Although implementation of HTML5-based MVPD apps on smart TVs and retail devices requires some degree of cooperation and agreement between MVPDs and third-party device manufacturers, it is reasonable, given the mutuality of interests, to expect them to reach agreements that benefit both sides. As evidence that this is the case, Comcast recently announced the launch of its Xfinity TV Partner Program, an apps-based program using HTML5 that provides a common framework to which smart TV, TV-connected, and IP-enabled retail device manufacturers can build to make the Xfinity TV Partner app available, thereby expanding the range of retail devices its customers can utilize to access their Xfinity TV cable service without the need to lease a set-top box.¹⁷ As part of the Program, Comcast will enter into an agreement based on a common set of contract terms with any third-party manufacturer that wishes to offer purchasers of its devices access to Comcast’s cable service through the use of

committed to RDK” F. Dawson, “RDK Emerges as Linchpin To Cable IP TV Migration,” December 10, 2013, <http://www.screenplaysmag.com/2013/12/11/rdk-emerges-as-linchpin-to-cable-ip-tv-migration/>.

¹⁶ Thomas C. Schelling, *Strategy of Conflict*, Cambridge: MA, Harvard University Press, 1980, at 90 notes that “Bandwagon behavior . . . may . . . depend on ‘mutually perceived’ signals, when a part of each person’s preference is a desire to be in a majority or, at least, to see some majority coalesce.” In this context, a standard serves to convey information to manufacturers about how other manufacturers might behave and thus permits them to coordinate their behavior. A particularly useful feature of HTML5 as a standard is that it permits coordination while still allowing for substantial latitude in the technical approaches taken by different manufacturers.

¹⁷ Comcast Corp., Comcast Launches Xfinity TV Partner Program; Samsung First TV Partner to Join (Apr. 20, 2016), <http://corporate.comcast.com/news-information/news-feed/comcast-launches-xfinity-tv-partner-program-samsung-first-tv-partner-to-join>; M. Hess, Comcast Seeks TV and Other Consumer Electronics Partners to Bring Xfinity TV Cable Service to More Retail Devices, Apr. 20, 2016, <http://corporate.comcast.com/comcast-voices/comcast-seeks-partners-to-bring-xfinity-tv-cable-service-to-more-retail-devices>.

apps on those devices without the use of traditional set-top boxes. Under the terms of this agreement, Comcast does not charge Program partners to register or participate in the Program, and any manufacturer whose devices support the HTML5 standard and other compatibility requirements can participate. Moreover, the agreement will ensure that the retail device delivers Comcast cable service intact, satisfies content security requirements, and meets applicable regulatory obligations. Samsung, one of the world's leading smart TV manufacturers, is the first to join the program, and Comcast anticipates interest from additional CE manufacturers. In addition, Comcast recently entered into an agreement that permits subscribers to view its Xfinity TV cable service using a customized version of its Xfinity TV Partner app on Roku devices and Roku TVs, which employ Roku's proprietary platform and do not conform to the HTML standard.¹⁸ This agreement further demonstrates Comcast's willingness and commitment to work with device manufacturers that have their own platforms to enable their customers to access cable service on these retail devices. Comcast is also open to working with other device manufacturers that do not support the HTML5 standard to explore customized versions of the Xfinity TV Partner app for their platforms. Together, these developments make it reasonable to expect apps to appear on an even larger number of third-party devices, including TVs and TV connected devices, relatively soon.

¹⁸ Comcast Corp., Comcast and Roku Bring Xfinity TV Partner App to Roku TVs and Roku Streaming Players, Apr. 20, 2016, <http://corporate.comcast.com/news-information/news-feed/comcast-and-roku-bring-xfinity-tv-partner-app-to-roku-tvs-and-roku-streaming-players>; M. Hess, Comcast Seeks TV and Other Consumer Electronics Partners to Bring Xfinity TV Cable Service to More Retail Devices, Apr. 20, 2016, <http://corporate.comcast.com/comcast-voices/comcast-seeks-partners-to-bring-xfinity-tv-cable-service-to-more-retail-devices>.

The Commission's Proposal Would Undermine Contractual Arrangements

16. The contractual relationships between programmers and MVPDs specify, in addition to the fees paid and the division of any advertising time, the manner in which the services are displayed to viewers. Programmers negotiate for these contractual provisions because the revenues that they receive, both in the form of advertising revenues and subscriber fees, depend not only on the intrinsic quality of their programming, but also on the manner in which it is displayed to consumers. Thus, for example, the Motion Picture Association of America has listed terms related to “brand protection, advertising, updates, channel placement, interactivity, presentation, on-demand and pay-per-view access, DVR functionality, resolution, cloud access, and availability windows and duration.”¹⁹ If third parties were to engage in behavior that undermined the contractual benefits for which programmers have negotiated, their revenues, and thus their incentives to create programming, would decline.

17. As noted above, the Commission states that it intends for its proposal “to preserve the contractual arrangements between programmers and MVPDs.” However, the best evidence that the proposal fails to achieve this objective is the virtually unanimous view of programmers that it would fundamentally alter these arrangements. For example, a group of programmers (the “Content Companies”) note the following about the Commission’s proposal:

... [the proposal] *would permit the abrogation by third parties of uniquely and carefully interrelated elements of licensing agreements*
...²⁰

¹⁹ Comments of the Motion Picture Association of America In the Matter of Request for Comment by the Media Bureau on the Report of the Downloadable Security Technology Advisory Committee, MB Docket No. 15-64, October 8, 2015 (hereafter “MPAA Comments”), p. 7.

²⁰ Content Companies Letter, p. 1, emphasis added.

... content companies carefully manage the terms under which content is provided to consumers. . . . *By enabling other companies to circumvent . . . licensing decisions*, [the proposal] would fundamentally alter content companies' ability to manage these important elements²¹

18. Other programmers have made similar statements:

The Commission's [proposal] . . . would allow third-party resellers to utilize our content for their own business purposes *without following any of the critical terms and provisions that we have negotiated with our current affiliate partners*²²

[The] proposal could potentially harm consumers and diverse and independent programmers if manufacturers of [video] devices *are given permission to ignore content licensing and financial agreements*²³

... the "Competitive Navigation" proposal makes no commitment to abide by content providers' licensing terms. Third-parties could potentially [seek to] disassemble the programming, features, and functions offered over distribution services and selectively reassemble some of them for their own commercial exploitation. *This could interfere with contracts*²⁴

Mandating such a regime, however, *could violate content owners' . . . contracts with distributors* regarding how their content may be presented, monetized, and accessed²⁵

Compelling content owners to disassemble their programming for use by others *would . . . abrogate contracts and licensing agreements*²⁶

²¹ Ibid. p. 2, emphasis added.

²² Letter from Rob Rader, General Counsel, Ovation LLC to The Honorable Tom Wheeler et al., MB Docket No. 15-64, February 11, 2016, p. 1, emphasis added.

²³ Letter from Concerned Organizations to The Honorable Tom Wheeler, February 11, 2016, MB Docket No. 15-64, p. 1, emphasis added.

²⁴ MPAA Comments, p. 2, emphasis added.

²⁵ Ibid. p. 10, emphasis added.

²⁶ Reply Comments of the Motion Picture Association of America, In the Matter of Request for Comment by the Media Bureau on the Report of the Downloadable Security Technology Advisory Committee, MB Docket No. 15-64, November 9, 2015, at 3, emphasis added.

19. These statements make clear that programmers of all sizes and types – including many independent and diverse programmers that have no affiliation with any MVPD – believe that, if the Commission’s proposal were adopted, third-party device manufacturers and app developers would engage in behavior that undermines the benefits programmers receive from the contractual provisions that they typically negotiate with MVPDs. If that were the case, programmers would receive less revenue from licensing their programming. That, in turn, would affect adversely their incentives to create programming, so that the quality of programming made available to MVPD subscribers would decline.

Third Parties Have Incentives That May Lead to Reduced MVPD Service Quality

20. The economic literature on so called “vertical restraints” identifies a wide variety of ways in which suppliers attempt to create incentives for retailers to engage in activities that increase the sales of the suppliers – what Klein and Murphy refer to as the provision of “desired retail services”²⁷ – but all of these mechanisms assume: (a) the existence of a contractual nexus between a supplier and its retailers and (b) that the revenues of suppliers are affected not only by the prices that they charge and the services that they offer, but also by the efforts of the retailers through which consumers purchase their products.

21. The revenues of cable programmers are clearly influenced by the efforts of the MVPDs through which they reach viewers. These efforts include the quality of the audio and video signals that they deliver, the channel line-ups that they offer, the placement of programmer’s

²⁷ B. Klein and K.M. Murphy, “Vertical Restraints as Contract Enforcement Mechanisms,” 31 *Journal of Law and Economics* 265 (1988), p. 267. Klein and Murphy analyze how manufacturers attempt to influence retailer behavior by adopting mechanisms that compensate for the fact that contracts are necessarily incomplete, that is, they do not specify all possible future contingencies, and retailer behavior cannot be fully observed. Despite this incompleteness, however, the analysis starts from the premise that a contractual nexus exists.

content on specific channels, and the additional services that they provide, and the MVPD's agreements with programmers generally address these efforts. These agreements also require MVPDs to deliver programming in its entirety – without editing, deletions, or alterations – and to deliver it without delay. The reason for these restrictions is that programmers – i.e., the “suppliers” in this particular example – wish to have their “retailers” – i.e., MVPDs in this scenario – offer “desired retail services.”

22. In the Notice, the Commission states that “. . . we believe that the Act requires competitive navigation that would allow third parties to develop innovative ways to access multichannel video programming.”²⁸ What this statement fails to note, however, is that, under the Commission's proposal, third parties would have incentives to *reduce* the quality of the subscriber viewing experiences if doing so increased the profits of the third parties themselves. Moreover, the “innovative ways” to which the Commission refers could involve, for example, overlaying third-party advertisements on programming and altering channel line-ups to favor third-party content. In fact, the Commission specifically concludes that some of the information provided by MVPDs to their subscribers “is unnecessary to include in the definition of Content Delivery Data. . . . The provision of such applications may allow MVPDs and unaffiliated companies to distinguish themselves in a competitive market.”²⁹ Whereas the economic literature described above analyzes the various ways in which suppliers can attempt *through contracts* to create incentives for their retailers to engage in behavior that increases supplier profits by *improving* services to consumers, under the Commission's proposal, there would be *no contractual relationships* between MVPDs and third-party device manufacturers or apps

²⁸ Notice, ¶ 15.

²⁹ Ibid., ¶40.

developers – i.e., the “retailers” in this particular example – so that the third parties would be free to *reduce* service quality if doing so increased their own profits.

23. To see how the absence of contractual (“business-to-business”) relationships between third-party device manufacturers or app developers and MVPDs can lead to reduced service quality, consider the following example: Assume that consumers are willing to pay \$50 for a video service if it is delivered to them in the form that is determined by the MVPD. Now suppose that an unaffiliated third-party vendor can alter the service, say by adding an application for which it can charge advertisers \$5 per subscriber, but that the effect of adding the application is to reduce the value of the service delivered by the MVPD to its subscribers to \$40. The unaffiliated vendor has an incentive to make this alteration – it collects \$5 per subscriber – but its gain is less than the reduction in value of MVPD service to subscribers – \$10 in this example. More generally, the reduction in the value of the service to subscribers would shift the demand curve for MVPD service downward and, as a result, there would be some combination of a reduction in the fee paid to the MVPD by its subscribers and a loss of subscribers.³⁰ The resulting loss in subscriber value and MVPD revenue would be permitted under the Commission’s proposal, but it would not occur if the unaffiliated third-party vendor needed to enter a contract with, and have the “consent” of, the MVPD to engage in this type of behavior.³¹

³⁰ Of course, this assumes that a significant number of MVPD subscribers employ the third-party device or app, which is, of course, the objective of the Commission’s proposal.

³¹ Of course, if the gain to the unaffiliated vendor were, say, \$15 per subscriber, the MVPD would give its approval **if** the unaffiliated vendor paid it more than \$10 per subscriber to offset what would otherwise be the loss to its subscribers. In this example, the MVPD would reduce its price to subscribers by \$10 but would be compensated through a payments from the unaffiliated vendor.

24. In addition to experiencing lost revenues from subscriber fees, cable operators and programmers could also suffer reductions in advertising revenues. This could occur directly, as where a reduction in the number of subscribers reduces viewing on MVPD programs and, in turn, the amount that advertisers are willing to pay to advertise on those programs, or indirectly, as where the presence of third-party advertising reduces the value that advertisers place on the viewership of spots on MVPD programs. In either case, the loss in advertising revenues would reduce the incentives and ability of MVPDs and programmers to supply programs to MVPD subscribers.

25. This analysis makes clear why MVPDs and programmers object to the Commission's proposal but at the same time embrace the apps-based approach despite the fact that both are intended to expand the use of third-party devices. The difference is that, unlike the Commission's proposal, the apps-based approach permits MVPDs to control the manner in which their services are presented and thus to enter only those arrangements with developers that their subscribers regard as improvements in service and that do not adversely affect advertising revenues, such as the introduction of the Comcast VOD app on TiVo devices.³²

26. Moreover, DSTAC Working Group 4 has pointed out that concern about the viewer experience is not limited to MVPDs: "Apps use a [User Interface] designed by the MVPD for interacting with the MVPD's experience. Consumers receive a common familiar MVPD experience across devices, such as the ability to navigate and see recent tuning history regardless

³² For a description of this arrangement see J. Baumgartner, "Comcast, TiVo Complete VOD Connection," *Multichannel News*, July 9, 2014, <http://www.multichannel.com/news/tv-apps/comcast-tivo-complete-vod-connection/375794>. For a subsequent development see J. Baumgartner, "Cox Brings VOD to Retail TiVo Boxes," *Multichannel News*, September 1, 2015, <http://www.multichannel.com/news/next-tv/cox-brings-vod-retail-tivo-boxes/393370>.

of which device was used. *This is similar to how consumers experience Netflix and other OTT video services.*”³³ Working Group 4 noted further that “[t]he Google YouTube Developer agreement now includes requirements that the developer protect Google’s brand and not ‘separate, isolate, or modify the audio or video components of any YouTube audiovisual content made available through the YouTube API,’” that “Netflix . . . terminated its public API, Gigaom,” and that “[we] have not found any evidence of a public API through which Amazon permits third party sites to play Amazon Prime Video outside of the Amazon experience.”³⁴ It also noted that “MVPDs take into consideration the same factors as any other app developer when deciding which platforms to use, platform capabilities, reach, ease of development, device popularity, license terms, etc.”³⁵ Finally, Working Group 4 quoted Thomas Riedl, head of Google’s Android TV, as follows:

Content owners and distributors are one of the key stakeholders for us. For them, what’s crucial is they want to deliver the best user experience and make sure that the content they provide to the user *is displayed exactly as they broadcast it*. Also in the role as app developer, *they need to be able to completely control the experience.*³⁶

27. Although MVPDs have incentives to permit their subscribers to access their programming on third-party devices that *increase* the value of their services by improving the viewer experience, they, together with programmers, are not indifferent to actions taken by third parties that *reduce* the

³³ Compiled DSTAC Report, p. 276, emphasis added. Working Group 4 also noted that: “Retail devices that host the application may continue to differentiate themselves with features, functions, networks, drives, speed, look, feel and price, and may have their own top level user interface, app store, and menu structure.” Ibid.

³⁴ Ibid. p. 277, footnote 47.

³⁵ Ibid. p. 265.

³⁶ Ibid. emphasis added.

value of that experience. Evidence that MVPDs and programmers distinguish between these two types of effects is that, although their agreements generally *require* third-party manufacturers to provide programming “live,” carry all advertising, and respect channel positioning provisions, these agreements generally *permit* a variety of subscriber-initiated actions such as access to MVPD features within the MVPD user interface like weather and sports information, presumably because those enhance the value of their service to viewers. For the same reason, it is reasonable to expect MVPDs to welcome actions taken by third-party manufacturers and app developers that increase the value that subscribers place on their services. Unlike the apps-based approach, however, the Commission’s proposal would permit third-party developers to engage in behavior that reduces the value of MVPD service offerings to subscribers.

28. Finally, as evidence that viewer behavior is affected by the manner in which programming is made available to them, Macquarie notes that Comcast experienced a substantial *reduction* in voluntary churn among subscribers that accessed its service through its higher quality next-generation X1 operating platform.³⁷ For exactly the same reason, churn is likely to *increase* if the viewer experience is degraded as a result of actions taken by third parties.

The Commission Understates the Difficulties Faced by Its Proposed Standardization Process

29. As indicated above, the Commission has proposed that the “three flows of information” that MVPDs would be required to provide to third-party device makers and apps developers would be based on a “published, transparent format that conforms to specifications set by open standards bodies.”³⁸ In proposing this approach, the Commission apparently hopes to avoid the

³⁷ Macquarie Research notes that “The real danger [to MVPDs] is losing the ability to dictate the consumer experience.” Amy Young & Andrew DeGasperi, Macquarie Research, BYOB: Not a Big Deal, January 29, 2016, p.1.

³⁸ Notice, ¶ 2.

criticism that some of its past efforts in setting standards have not been entirely successful.

Leland Johnson and I have previously evaluated some of these efforts.³⁹ We found, for example that:

The Federal Communications Commission (FCC) evaluated competing AM stereo technologies and initially selected one as the mandatory standard. *Industry response was negative, leading the Commission to abandon its decision.*

After an industry committee evaluated alternative [TV stereo] technologies and recommended the Zenith/dbx system as the standard, *the FCC decided not to make use of this system mandatory. Nonetheless, the Zenith/dbx system [became] the de facto standard . . .*

After intensive investigation starting in 1949, the FCC chose the CBS technology as the mandatory [color television] standard. *The decision was quickly seen as a mistakes, and further industry deliberations led to the recommendation of the RCA technology as the standard.*

. . . the cable television industry quickly moved to a standard for program scrambling and an authorization system to permit access to programs on a pay basis. *Neither government action nor cooperative standard setting was involved.*

. . . *an industry committee quickly developed and recommended a standard to the FCC to ensure compatibility among cellular mobile telephone units throughout the United States. The Commission adopted the recommendation. . .*

30. Among the conclusions that Johnson and I reached regarding the appropriate role of government in the standard-setting process that are especially relevant in the present context are the following: (a) the government should depend heavily on industry activities, as exemplified by the WAVE Project and other HTML5-based app initiatives, instead of its own evaluations; (b) government actions to mandate technologies are especially inappropriate when technologies are

³⁹ S.M. Besen and L.L. Johnson, *Compatibility Standards, Competition, and Innovation in the Broadcasting Industry*, Santa Monica, CA: RAND Corporation, 1986, <http://www.rand.org/content/dam/rand/pubs/reports/2007/R3453.pdf>, pp. vi-vii.

changing rapidly and there is considerable uncertainty about the costs and benefits of the alternatives, as is the case here;⁴⁰ and (c) the availability of low cost translators, such as apps, contributes importantly to innovation, because apps allow for the simultaneous use of, and experimentation with, otherwise incompatible technologies.

31. In 2003, the Commission adopted a regulation that “required cable operators to include an IEEE-1394 interface [in their set-top boxes] and to comply with standards that would allow subscribers to control their set-top boxes through their television set remotes via that interface.”⁴¹ Seven years later, the Commission “realized that consumer interest in the IEEE-1394 interface had waned, and that consumers were using interfaces other than IEEE-1394 to network their consumer electronics devices.”⁴² It then modified its rule by replacing the IEEE-1394 requirement with one that allowed operators to provide set-top boxes that complied with an open industry standard. Despite the fact that the use of the IEEE-1394 interface was apparently quite limited, the cable industry estimated that it had to spend about \$400 million to comply with it.⁴³

32. The Commission’s ban on integrating security features into its set-top box suffered a similar fate. As John Gale and I explained when the ban was being considered:

⁴⁰ Paul David has characterized government agencies as “blind giants” because “at the time when [they] can have the most influence, they also have the least amount of information about what action would be most appropriate.” P.A. David and S. Greenstein, “The Economics of Compatibility Standards: An Introduction to Recent Research,” 1 *Economics of Innovation and New Technology* 3, 1990, p. 30.

⁴¹ Federal Communications Commission, Memorandum Opinion and Order In the Matter of Implementation of Section 304 of the Telecommunications Act of 1996, TiVo’s Request for Clarification or Waiver of the Audiovisual Output Requirement of Section 76.640(b)(4)(iii), Adopted: April 3, 2014, Released: April 4, 2014, ¶2.

⁴² Ibid. ¶ 3.

⁴³ L. Ellis, “Fireware: A \$400 Million Black Hole,” *Multichannel News*, June 28, 2010, <http://www.multichannel.com/blog/translation-please/firewire-400-million-black-hole/373353>.

. . . there may be efficiencies, in both improved security and lower costs, from combining security and features in a single box. These efficiencies would be lost if the operator were prevented from offering integrated boxes in addition to separate security boxes. . . . [In addition] if . . . operators are required to offer separate security-only boxes, they will have neither the incentive nor the ability to behave anticompetitively to prevent the development of a retail market for features boxes. As a result, there would be no competitive harm from permitting them also to offer integrated boxes.⁴⁴

We also explained that “to the extent commercial availability is achieved through separation of security and features, the Commission should allow the precise boundary between security and non-security elements . . . to be determined by the on-going negotiations among MVPDs, network equipment manufacturers, manufacturers of consumer electronic equipment, and retailers.”⁴⁵

33. Although the Commission eventually conceded that “[t]he integration ban raises the cost of set-top boxes for cable operators, which discourages operators from transitioning their systems to all-digital,”⁴⁶ it did not eliminate the ban. Instead, it required video device operators to file for exemptions on a case-by-case basis. Eventually, however, the ban was eliminated entirely when Congress adopted the STELA Reauthorization Act of 2014. The cable industry has estimated that the cost of the integration ban was more than \$1 billion.⁴⁷

⁴⁴ Besen and Gale, op. cit. pp. 17-18.

⁴⁵ Ibid. p. 17, footnote omitted.

⁴⁶ Federal Communications Commission, 47 CFR Parts 15 and 76, CS Docket No. 97-80; PP Docket No. 00-67; FCC 10-181, Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices; Compatibility Between Cable Systems and Consumer Electronics Equipment.

⁴⁷ NCTA, “50 Million Reasons To End the Integration Ban,” <https://www.ncta.com/platform/public-policy/50-million-reasons-to-end-the-integration-ban/>, Oct. 30, 2014.

34. The Commission's recent attempt to achieve widespread commercial availability of MVPD subscriber devices through the use of the CableCARD has similarly been unsuccessful. There has been little consumer interest in the technology (in contrast to the apps-based model) and few manufacturers of retail CableCARD devices. One analysis, which is fairly typical of the assessed shortcomings, described the following limitations of CableCARDS:

They offered a one-way technology and thus were incompatible with any interactive services.

They initially had only a single tuner and thus could not offer services such as picture in a picture or the ability to record one program while watching another.⁴⁸

Given these shortcomings, it is hardly surprising that the CableCARD initiative failed.

35. This is not to say that efforts by the Commission to guide the standards process are invariably unsuccessful. The lessons that I draw from this history are that mistakes in setting standards cannot be completely avoided, that the government is often no wiser than industry participants, and that often the best course of action is for the Commission to allow industry participants to develop standards without government interference or technical mandates especially where, as here, there is already an ongoing industry effort that is likely to "assure a commercial market for devices that can access multichannel video programming and other services offered over multichannel video programming systems."⁴⁹ Although the Commission

⁴⁸ J. Falcone, "Can Tru2way Succeed Where CableCard Failed?," May 29, 2008, <http://www.cnet.com/news/can-tru2way-succeed-where-cablecard-failed/>. For a similar analysis see N. Anderson, "FCC admits CableCARD a failure, vows to try something else," December 4, 2009 <http://arstechnica.com/tech-policy/2009/12/fcc-admits-cablecard-a-failure-vows-to-try-something-else/>. For another list of CableCARD deficiencies see Compiled DSTAC Report, p. 244.

⁴⁹ Notice, ¶ 1.

states that it would leave the development of specific standards to “open standards bodies,”⁵⁰ it is clear that these bodies would be significantly constrained in their deliberations by the required information flows that the Commission has proposed.⁵¹

MVPDs Would Incur Significant Costs in Complying with the Commission’s Proposal

36. As compared to the apps-based model being pursued in the marketplace today, the approach being proposed by the Commission would not only reduce revenues to programmers and MVPDs, it would also require MVPDs to incur significant additional costs.⁵² As a result, MVPDs would be required either to raise the prices paid by their subscribers, or reduce the quality of their service offerings, or both.

37. Apps can usefully be thought of as adapters that mediate between MVPD networks and third-party devices. Apps are widely used because they permit interactions between otherwise incompatible platforms. As Farrell and Saloner have noted, “converters (also known as translators, emulators, adapters or gateway technologies) may provide compatibility *without constraining variety or innovation*.”⁵³ Significantly, the apps-based approach imposes fewer costs on MVPDs, programmers, and consumers than does the Commission’s proposed approach.⁵⁴

⁵⁰ Ibid., ¶ 2.

⁵¹ Ibid., ¶¶ 38-40.

⁵² See Declaration of Tony Werner ¶¶ 3, 7-19 (hereafter “Werner Declaration”).

⁵³ J. Farrell and G. Saloner, “Converters, Compatibility, and the Control of Interfaces,” 40 *Journal of Industrial Economics* 9 (1992), p. 10, emphasis added. In this regard, it is interesting to note Working Group 4’s statement (Working Group 4 Report, p. 264) that the Application-Based Service with Operator Provided User-Interface System “abstracts the diversity and complexity of service providers’ access network technologies and customer-owned IP device and accommodates rapid change and innovation by both service providers and consumer electronics manufacturers.”

⁵⁴ Werner Declaration ¶¶ 4-5, 7.

38. As already noted, the MVPD apps have already been deployed in a large number and wide variety of consumer devices and are likely to be deployed in additional devices such as smart TVs and connected TV devices (e.g., Roku, Apple TV, Chromecast) relatively soon. However, even MVPDs like Comcast that have already made substantial investments in IP-based networks used to deliver service to apps would incur substantial additional costs in modifying their networks to comply with the Commission's proposal, for example by making changes in their network servers to support the three mandatory information flows.⁵⁵ These costs would be even greater for those MVPDs that have not engaged in extensive development efforts and related network investments.

39. In addition, whereas at present MVPDs have direct visibility into their apps running on third-party devices and, as a result, can often identify the source of a subscriber's problem and resolve it remotely, that would not be the case under the Commission's proposal. As a result, it might not be immediately evident whether a problem experienced by a subscriber originates within the MVPD's network or in the equipment or app obtained from a third-party vendor. MVPDs, thus, would incur additional consumer support costs as they are forced to deal with a larger volume of customer inquiries, including ones for which their networks are not the source of the consumer's problem, and they would likely have to undertake a larger number of "truck rolls" to attempt to resolve problems at the consumer's premises.⁵⁶

⁵⁵ Ibid. ¶¶ 7-12.

⁵⁶ See *ibid.* ¶¶ 5, 13. See also Compiled DSTAC Report, pp. 219-220, describing how MVPDs can deploy diagnostic and other troubleshooting tools in an apps-based environment when it notes that: "As premium video content is streamed over the home network from a video gateway to retail devices, MVPDs need a mechanism to diagnose and troubleshoot home network related issues remotely. Such a mechanism needs to support the ability to test the home network's connectivity between a video gateway and retail devices, provide network topology, and information about network throughput. In addition, the ability to query information about retail

40. Finally, by requiring Comcast's network to interact with a potentially very large number of different types of devices, the Commission's proposal would place additional demands on the capacity of Comcast's network. An important advantage of the apps-based approach as compared to the approach proposed by the Commission is that apps can play an important role in permitting MVPDs to moderate the demands that are placed on their networks. That is, instead of the MVPD network being treated as a "dumb pipe" that must accept all traffic generated by apps running on third-party devices, an MVPD can design its apps to permit it to anticipate and efficiently manage the traffic flows and demands placed on its network by these devices. This is because, in addition to providing the information that defines the MVPD user interface, apps include network management tools that assist with the efficient deployment of service to the app, such as code that requests content that is cached on the network closer to the customer. This allows the network operator to limit excessive bandwidth demands on its network, thus limiting network costs and increasing the quality of service that users experience. Under the Commission's proposal, however, third-party device manufacturers and app developers would lack the incentives to design products that ensure the efficient use of MVPD network resources. Comcast and other MVPDs would, as a practical matter, be forced to moderate the effects of this type of third-party behavior through the use of a new gateway device at the subscriber's premises. That, too, would involve additional development costs.⁵⁷ In addition, the need for an additional device in the home in order to accommodate the Commission's proposal is squarely at

devices such as device model, manufacture, and firmware needs to be enabled by this mechanism." These tools would be absent under the Commission's proposal.

⁵⁷ Werner Declaration ¶¶ 11-16.

odds with a key goal of the proposal, namely to reduce consumer reliance on MVPD-provided devices, which would not be the case under the apps-based approach.

Conclusion

41. Consumer devices are complements to the services that MVPDs offer, so that MVPDs and their subscribers benefit from improvements in, or reductions in the prices of, devices that are provided by third parties. The marketplace success of MVPD apps demonstrates this point. Moreover, the ongoing efforts to extend the use of HTML5-based apps to a wide range of consumer devices, including smart TVs and TV-connected devices such as Roku, Apple TV, and Chromecast, provide further evidence of the complementarity between retail devices and MVPD services. Nonetheless, MVPDs and content providers are understandably concerned about how their programming might be presented on third-party devices under the Commission's proposal. Most fundamentally, they are concerned that third parties could take actions that would adversely affect the demand for MVPD services and/or reduce advertising revenues and fundamentally alter existing contractual arrangements, thus adversely affecting incentives to produce programming. Together with the fact that the outcome of the Commission's proposed technical mandate, which ignores marketplace developments, and the fact that MVPDs and their subscribers would incur substantial additional costs if the Commission's proposal were adopted, these factors suggest that the best course of action would be for the Commission to allow the development of the marketplace-driven apps model to proceed rather than to attempt to displace it by the proposal in its Notice.

I, Stanley M. Besen, declare under penalty of perjury that the foregoing declaration is true and correct to the best of my knowledge, information, and belief.


Stanley M. Besen

Executed on April 22, 2016

Appendix A
CURRICULUM VITAE

STANLEY M. BESEN

EDUCATION

City College of New York

B.B.A., Economics (1958)

Yale University

M.A., Economics (1960)

Ph.D., Economics (1964)

PROFESSIONAL EXPERIENCE

1992-2008 - Vice President, Charles River Associates

1980-1992 - Senior Economist, The Rand Corporation

1990-1991 - Visiting Professor of Law and Economics, Georgetown University Law Center

1988-1989 - Visiting Henley Professor of Law and Business, Columbia University

1985-1988 - Coeditor, Rand Journal of Economics

1978-1980 - Co-Director, Network Inquiry Special Staff, Federal Communications Commission

1971-1972 - Brookings Economic Policy Fellow, Office of Telecommunications Policy, Executive Office of the President

1965-1980 - Assistant Professor, Associate Professor, Professor of Economics, Allyn R. and Gladys M. Cline Professor of Economics and Finance, Rice University

1963-1965 - Economist, Institute for Defense Analyses

1962-1963 - Acting Assistant Professor of Economics, University of California, Santa Barbara

CONSULTANCIES

The Rand Corporation, 1972-1978

Office of Telecommunications Policy, Executive Office of the President, 1972-1977

Department of Defense, 1967

PROFESSIONAL ACTIVITIES/HONORS

Member, ICANN Competition, Consumer Trust and Consumer Choice Review Team, 2015-

Member, National Research Council Board on Earth Sciences and Resources, Division on Earth and Life Studies, Committee on Licensing Geographic Data and Services, 2002-2004

Member, The National Academies, Computer Science and Telecommunications Board of the Division on Engineering and Physical Science, Committee on Internet Navigation and the Domain Name System, 2001-2004

Member, Editorial Board, Economics of Innovation and New Technology, 1989-present

Member, Editorial Board, *Information Economics and Policy*, 1992-2004

Member, U.S. National Committee on Data for Science and Technology (CODATA), National Academy of Sciences/National Research Council, 1993-1996

Member, Office of Technology Assessment Advisory Panel on Communications Systems for an Information Age, 1986-1988

Member, Regional Telecommunications Planning Advisory Committee, City of Cincinnati, 1985

Member, Office of Technology Assessment Advisory Panel on Intellectual Property Rights in an Age of Electronics and Information, 1984-1985

Expert, World Intellectual Property Organization/UNESCO Meeting on Unauthorized Private Copying of Recordings, Broadcasts and Printed Matter, 1984

Listed in *Who's Who in America*, 1982–1983, 1984–1985, 1986–1987, 1988–1989, 1990–1991, 1992–1993, 1994–; *Who's Who in Science and Engineering*, 2010, 2011-2012, 2016-2017; *Who's Who in the East*, 2001; *Who's Who in Finance and Industry*, 1991; *Who's Who in Finance and Business*, 2005, 2007, 2009; and *Who's Who in the World*, 2014, 2016.

Member, Editorial Board, *Southern Economic Journal*, 1979-1981

Member, Task Force on National Telecommunications Policy Making, Aspen Institute Program on Communications and Society, 1977

Brookings Economic Policy Fellow, 1971-1972

Member, Technical Advisory Committee on Business Development, Model City Program, City of Houston, 1969-1971

Wilson University Fellow, 1959-1961

Overbrook Fellow, 1958-1959

Beta Gamma Sigma, 1958

PUBLICATIONS

Books

Misregulating Television: Network Dominance and the FCC, University of Chicago Press, 1984 (with T.G. Krattenmaker, A.R. Metzger, and J.R. Woodbury). Paperback edition, 1986.

New Television Networks: Entry, Jurisdiction, Ownership and Regulation, Final report, Network Inquiry Special Staff, Federal Communications Commission, 1980 (with T.G. Krattenmaker et al).

Introduction to Monetary Economics, Harper and Row, 1975.

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